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January 2026

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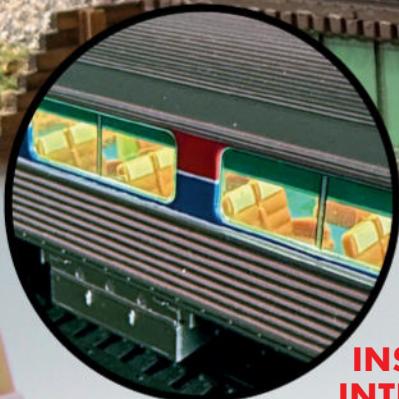
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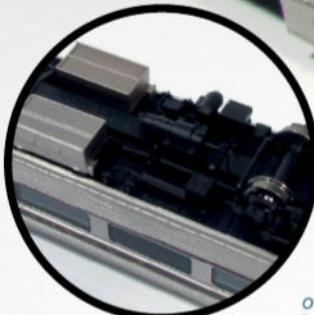
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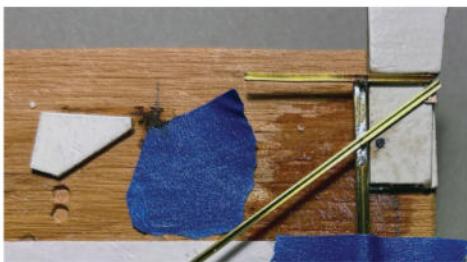
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On the cover: A local heads into East Troy on our new project railroad, the MR&T East Troy Industrial Park RR. *Cody Grivno photo*



Next issue

In February, take a tour of the Union Pacific's Geneva Subdivision, build a turntable, learn Pelle's scratchbuilding tips for brick structures, build benchwork, and more!

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More DIY DCC information

Maybe you read the story in the December issue of *Model Railroader* about how Chris Russo built a budget DCC system based on an Arduino microcontroller. Maybe you wished you had the Arduino sketches, or code, to make it work. And the files for printing the case on your 3-D printer would be really handy too, right?

We thought so. That's why we posted Chris's story on Trains.com, along with a link to download those sketches and 3-D printer files. We put the whole story for you there, too, so you don't have to worry about getting solder and flux on your copy of the magazine. Just keep the pointy end of your soldering iron away from your computer!



Getting ready for operations

Jim Kelly, retired *Model Railroader* managing editor and N Scale Insights columnist, has been modeling the joint Santa Fe/Southern Pacific Tehachapi Loop over several model railroads. He's working out the kinks for operations as the layout's debut is rushing forward. Some of the MR and Trains.com crew were on hand for a shakedown session designed to stress-test Jim's operating plan and layout. Check out Lucas Iverson's photo gallery on Trains.com.



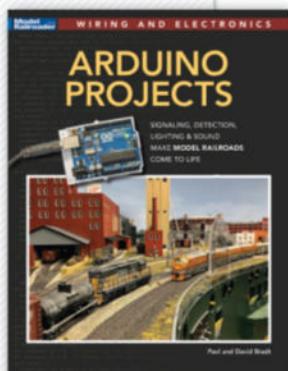
East Troy from the beginning

This month, we introduce our Milwaukee, Racine & Troy East Troy Industrial Park project layout. If you're a member of Trains.com Video, you could have been watching this series from when we started building the layout at the beginning of 2025.

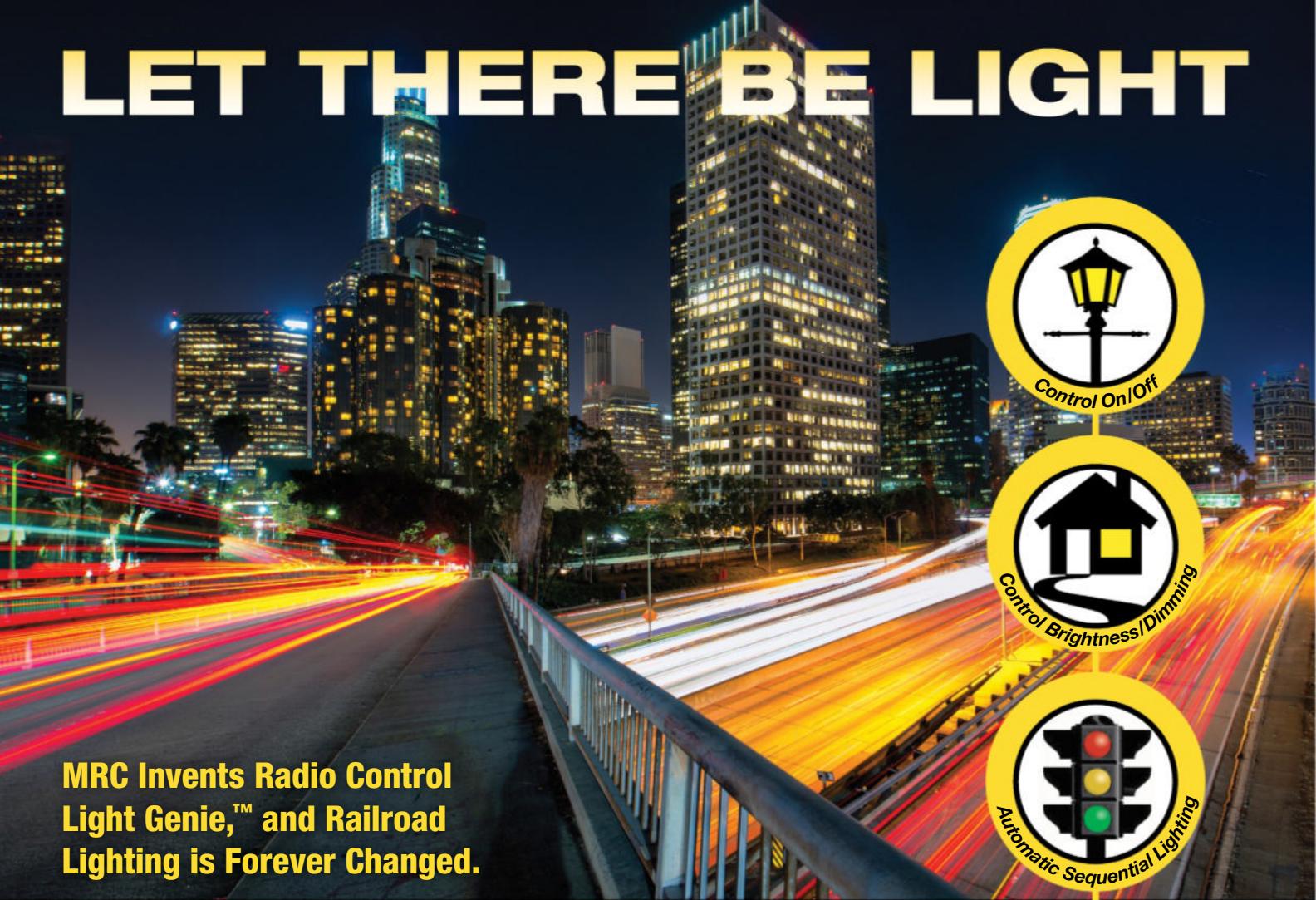
If you're just finding out about the project in this issue, and you want to catch up on the video coverage, head over to Trains.com Video and watch from the beginning. We take you all the way through, with a couple of Sidetracks on the way!

Arduino Projects book support material

For the folks who have purchased Paul and David Bradt's *Arduino Projects* book, we now have the complete Arduino sketch library online on Trains.com. If you don't yet have this book, and you're looking for ways to incorporate Arduino projects into your layout, check out *Arduino Projects* on Shop.Trains.com. There's plenty to learn in this great book!



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New Year, new projects

As we start our 93rd year, we're looking forward to some new stuff. An obvious one is our cover story about building a new version of the Milwaukee, Racine & Troy, called the East Troy Industrial Park.

Like the two previous versions of the MR&T, the ETIP will be a place for us to build how-to projects that you'll see in future issues of the magazine.

For the next few months, we'll share how we went from a pile of lumber to an operating railroad. Then in the months and years to follow, we'll continue to add new scenes, and maybe even add on to the railroad.

In addition to the stories in the magazine, subscribers to Trains.com Video can watch the construction come to life, and since this layout is along two walls of our workshop, you can check out

progress on our workshop webcam, hosted on Trains.com. One advantage to this version of the MR&T is that it isn't permanently attached to the building, so if we should need or want to move in the future, we might be able to bring it with us.

We're also pleased to announce a promotion. Tony Koester has been lending his writing, editing, and modeling skills to *Model Railroader* for more than 40 years. He's held the roles of author, columnist, editor, and contributing editor.

It's time to recognize his efforts with a new title, that include a few new duties. We've decided to call this role consulting editor. This makes sense, because Tony is an invaluable resource for me and the rest of the team to bounce ideas off of, and to answer questions about

railroading and model railroading.

Now, Tony will be the first one to tell you he doesn't know everything, but he does know just about everyone. If Tony doesn't know the answer, he knows who does. It's that kind of consulting that makes him such an essential asset to *Model Railroader*.

With the new title comes a way to reach Tony directly: consulting.editor@firecrown.com. If you want to reply to one of Tony's Trains of Thought columns, or inquire about the Prototype to Model feature that Tony conducts for the magazine, you can reach out to him directly.

Of course, if you have an idea for Model Railroad Planning, or want to comment on a story in one of those special issues, that address will be your direct line to the editor of the magazine.



We're excited about the future of model railroading here at MR, and we hope you'll join us for another year of inspiring and entertaining stories that will help you to build your model railroad, or imagine the next one to come.

We're happy to be your guides to one of the most diverse and interesting hobbies in the world!

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We welcome contributions from readers, including articles, photographs, and drawings. For more information on submitting material, email Editor Eric White at eric.white@firecrown.com. Model Railroader assumes no responsibility for the safe return of unsolicited material. We assume unsolicited material is intended for publication by Firecrown Media unless otherwise noted. We assume letters, questions, news releases, and club news items are contributed gratis.

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HO scale



Alco PA1 diesel locomotive. Rapido Trains offers this six-axle unit decorated for Erie-Lackawanna; Atchison, Topeka & Santa Fe; Gulf, Mobile & Ohio; Missouri Pacific; Missouri-Kansas-Texas; New York, New Haven & Hartford; and Union Pacific in one to three road numbers per scheme. Two-unit sets (Alco-GE Demonstrator, AT&SF, Canadian National

Demonstrator, and UP) are also available. Features on the HO Alco PA1 include prototype-specific details, a full cab interior, and factory-installed grab irons and handrails. Alco PA1 diesels without sound retail for **\$239.95**. Models with an ESU LokSound V5 decoder are priced at **\$349.95**. Rapido Trains, 905-474-3314, rapidotrains.com

HO scale locomotives



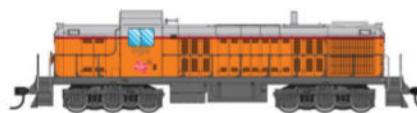
• **Alco RS3 diesel locomotive.** Lehigh Valley, Central Railroad Co. of New Jersey, Chicago & North Western, Conrail, Delaware & Hudson, Delaware-Lackawanna, Louisville & Nashville, Penn Central, and Reading Co. One to three numbers per scheme. Etched-metal radiator fan, metal grab irons, and all-wheel drive and electrical pickup. Direct-current model with 21-pin NEM connector, \$209.99; with SoundTraxx Econami decoder, \$284.99. Athearn Trains, 800-338-4639, athearn.com



• **General Electric ET44 diesel locomotive.** Rivet Counter line: CPKC, BNSF Ry., CSX, Kansas City Southern, Norfolk Southern, and Union Pacific. HypoTypical line: Atchison, Topeka & Santa Fe; Burlington Northern; Chessie System; Chicago & North Western; Conrail; and Denver & Rio Grande Western. Detailed cab interior; see-through, etched-metal radiator intake and exhaust grills; and numerous factory-applied detail parts. Direct-current model with 21-pin connector, \$194.99; with ESU LokSound V5 sound decoder, \$304.99. ScaleTrains, 844-987-2467, scaletrains.com



• **Motive Power Industries MP36PH-3C diesel locomotive.** Metra, Metrolink, and Utah FrontRunner. Injection-molded plastic body, die-cast metal underframe, detailed cab interior, and factory-installed metal grab irons. Direct-current model, \$249.95; with DCC and sound, \$369.95. Master Line. Atlas Model Railroad Co., 908-687-0880, shop.atlasrr.com



• **Alco RSC-2 diesel locomotive.** Milwaukee Road (two paint schemes); Seaboard Air Line; Seaboard Coast Line; Soo Line; and Union Pacific. Two to four road numbers per scheme. Air- or water-cooled exhaust stack per prototype, die-cast metal chassis, and light-emitting-diode headlights. Direct-current model with factory-installed speaker, \$177.98;

with ESU Sound & DCC, \$242.98. Mainline series. Wm. K. Walthers Inc., 414-527-0770, walthers.com

HO scale freight cars



• **36-foot low-side, drop-bottom gondola.** Baltimore & Ohio; Central Pacific RR; Central Railroad of New Jersey; Chicago, Milwaukee & St. Paul Ry.; Denver & Rio Grande Western; and Union Pacific. Three road numbers per paint scheme. Floor with molded gate detail, K-style air brakes and piping, and 40-ton Andrews trucks. New 33" metal wheelsets representing cast iron wheels with front and back detail. Minimum radius, 15". \$49.99. Athearn Trains, 800-338-4639, athearn.com



• **American Car & Foundry Pressureaide covered hopper.** New paint schemes: Katalistiks, Akzo Nobel, Amaizo, The Andersons, Cyprus, and Montana Talc Co. New road numbers: Cerestar. Etched-metal running boards, detailed brake gear with scale piping,

blackened metal wheels, and 100-ton roller-bearing trucks. \$52.95. Master Line. Atlas Model Railroad Co., 908-687-0880, shop.atlasrr.com



● **Pacific Car & Foundry Southern Pacific B-100-32 and -34 class boxcars.**

B-100-32: Southern Pacific (delivery, faded 1980s+), and ex-Golden West Service), Arizona & Eastern (ex-NOKL/SP patch), Canadian Pacific (Golden West Service), Golden West Service (as-rebuilt), and Northwestern Oklahoma RR (ex-SP patch). B-100-34: Southern Pacific (delivery and faded 1980s+), Golden West Service (as-rebuilt), and NOKL (ex-SP patch). Factory-applied metal grab irons and Rapido semi-scale metal couplers. Suggested minimum radius, 18". Single car, \$59.95; three-pack, \$179.85; and six-pack, \$359.70. Rapido Trains, 905-474-3314, rapidotrains.com



● **81-foot eight-axle, depressed-center flatcar.** TTX; Atchison, Topeka & Santa Fe; New York Central; Norfolk & Western; Pittsburgh & Lake Erie; Siemens Westinghouse; Southern Ry.; and Western Pacific. One to three numbers per scheme; also available undecorated. Die-cast metal body, articulated end platforms, and four 100-ton trucks with 36" metal wheels. Minimum radius, 22"; recommended radius, 24". \$44.98. Mainline series. Wm. K. Walthers Inc., 414-527-0770, walthers.com

HO scale passenger equipment



● **Streamlined passenger cars.**

Atlantic Coast Line; Atchison, Topeka & Santa Fe; Burlington Northern Santa Fe; Norfolk Southern; Norfolk & Western; Penn Central; and Pennsylvania RR. Individual baggage car, diner, and Vista-Dome; three-pack contains two coaches and observation car. Injection-molded plastic construction, four-wheel passenger car trucks, metal wheels, and

O scale



Cripple Creek & Western rail maintenance office. This factory-assembled scene is the latest offering from Menards. Features on the O scale rail maintenance office (\$49.99) include factory-installed figures, barrels, cans, crates, and railroad ties; a pickup truck with illuminated headlights; and light-emitting-diode lighting. The lighting features require 4.5 volt power supply, sold separately. The scene, which includes a scenicked base and two trees, measures 11 5/8" x 7 3/4" x 5 1/2". You can purchase the rail maintenance office online or at your local Menards store. Menards, menards.com/trains

McHenry plastic scale couplers. Minimum radius, 18". Single cars, \$49.99 each; three-pack, \$124.99. Roundhouse line. Athearn Trains, 800-338-4639, athearn.com



● **Bay Area Rapid Transit Legacy Fleet**

A, B, and C cars. New run includes American Revolution Bicentennial scheme. NEM-style close-coupling system; low-profile drive system in A and C cars; and full, multi-color interior detailing. Track-powered, flicker-free interior lighting. Minimum radius, 18"; preferred radius, 22". Direct current: Four-car train (powered A cars/unpowered B cars and powered C cars/unpowered B cars), \$549.95; A and C cars (powered), \$229.95 each. Digital Command Control: four-car train, \$749.95; A and C cars, \$339.95 each. Individual B car (unpowered), \$89.95. Unpowered A car with display case, \$149.95. Rapido Trains, 905-474-3314, rapidotrains.com



● **New York, New Haven & Hartford Roger Williams.** Powered cab cars: New

York, New Haven & Hartford (three-car set [two powered cab cars, one unpowered intermediate car]); Amtrak (early version, phase 1, and phase 3 [two powered cabs]); and Penn Central (two-cab car set [two powered cabs; powered, unnumbered cab also available]).

Unpowered intermediate car: Amtrak, Penn Central, and New Haven. Cab units feature in-floor RDC drive system. Intermediate cars are unpowered but fully illuminated. All models feature factory-installed grab irons and handrails and full interior detail. Suggested minimum radius, 22". Direct-current models: Single cab (powered), \$259.95; two-cab set (both cab cars powered), \$519.90; and three-car set (two powered cab cars, one unpowered intermediate car), \$699.95. With Digital Command Control and sound: Single cab (powered), \$369.95; two-cab set (both cab cars powered), \$729.90; and three-car set (two powered cab cars and one unpowered intermediate car), \$899.95. Single unpowered intermediate car, \$189.95. Rapido Trains, 905-474-3314, rapidotrains.com

HO scale details and accessories

● **Ford F-350 hi-rail trucks.** BNSF Ry., Canadian National, Canadian Pacific, *Continued on page 16*

ScaleTrains HO EMD GP39E



As a Burlington Northern fan, I was fired up when ScaleTrains announced it was producing the Electro-Motive Division (EMD) GP39E in HO scale. The model, part of the manufacturer's Rivet Counter line, depicts the four-axle road unit in its as-delivered appearance with Quantum Q2000 crossing strobes on the front deck.

Select road names in the latest run of ScaleTrains Rivet Counter line GP30s are based on prototype rebuilds. Burlington Northern 2762 was part of the railroad's 2750 through 2778 series. The full-size unit was built in September 1962 as Southern Ry. GP30 No. 2532. The unit joined the Norfolk Southern fleet after the 1982 merger between Southern Ry. and Norfolk & Western.

In October 1991, the locomotive was remanufactured by EMD, becoming BN 2762. The heavily rebuilt locomotive, with improved electrical components and a new cab and short hood, among other upgrades, was reclassified a GP39E.

The unit became part of the Burlington Northern Santa Fe roster following the 1995 merger between BN and Atchison, Topeka & Santa Fe. It was renumbered BNSF 2752 on Oct. 20, 1999.

The ScaleTrains EMD GP39E features an injection-molded plastic shell and die-cast metal chassis. The Dash-2 cab features sunshades, positionable side windows, and small

mirrors. A Motorola ASP-16 firecracker antenna is located on the roof. The detailed cab interior has a floor, rear wall, seats, and a control stand.

Like the prototype, the long hood still retains some of its GP30 profile. A cast brass Leslie RS-3-L air horn, etched-metal lift rings, a 48" standard range dynamic brake fan, and two 48" radiator fans can all be found on top of the long hood on the BN GP39E. All of the fans have see-through grills.

Our review sample is neatly painted in BN's 1991 scheme, featuring a white cab face and 2"-wide white stripe on the cab sides and long hood separating the Cascade Green and black. The breaks in the stripe for the door handles in the radiator section of the long hood are prototypical. Nice attention to detail!

I did initial testing at the workbench using an NCE Power Cab. At step 1, the model crawled along at less than 1 scale mph. At step 28, the GP39E achieved a top speed of 62 smph. The maximum speed of the full-size units was 65 mph. With a drawbar pull of 3.4 ounces, the GP39E can pull 48 free-rolling freight cars on straight and level track.

I then took the ScaleTrains model over to our Winston-Salem Southbound for further evaluation. The GP39E switched the industries without issue, comfortably navigating the No. 4 turnout and 30-degree crossing.



Prototype photos show the EMD GP39E on mainline freights and locals, reflecting the versatility of these BN units. ScaleTrains has done a wonderful job capturing the lines of this GP30 rebuilds. — *Cody Grivno, senior editor*

Facts & features

Price: Direct-current model with 21-pin connector, \$204.99; with ESU LokSound V5 sound decoder, \$314.99.

Manufacturer

ScaleTrains
4901 Old Tasso Road NE
Cleveland, TN 37312
scaletrains.com

Era: October 1991 to October 1999 (as decorated)

Road names: Burlington Northern (GP39E); Atchison, Topeka & Santa Fe (GP30u); Chessie System with Baltimore & Ohio reporting marks (Phase Ia GP30 and GP30M); Chicago Great Western (Phase IIb GP30, as delivered); CSX (Chessie System patchout, GP30M); Penn Central (Phases Ia and Ic GP30); and Union Pacific (Phase Ic GP30).

Features

- Body-mounted metal semi-scale Type E couplers, at correct height
- Metal wheel stubs on plastic drive axle gears, in gauge
- Minimum radius, 18"; recommended radius, 22"
- Weight: 14.3 ounces

Kato N Siemens ALC-42 Charger



In the February 2024 issue of *Model Railroader*, we reviewed the direct-current version of the Siemens ALC-42 Charger diesel locomotive from Kato USA Inc. Recently, we received a sample of the modern passenger unit equipped with a SoundTraxx Tsunami2 TSU-KN2 sound decoder.

With an aging fleet of General Electric P40 and P42 diesel locomotives and changing emission standards, Amtrak began searching for new units to power its long-distance passenger trains. The solution? The Siemens ALC-42 Charger.

Amtrak ordered its new 4,200 hp passenger diesels in two batches — 75 in 2018 and 50 in 2022 — numbered 300 through 424. The passenger carrier took delivery of its first ALC-42 in June 2021; units 301 and 302 debuted in revenue service on the *Empire Builder* in February 2022. All 125 diesels are slated to be in service by 2029.

The shell on Kato's ALC-42 is a multi-piece plastic assembly. Though many of the detail parts are molded, they're finely rendered — check out the fan blade detail in the grills over the engine cooling compartment! For added realism, brush-paint the vertical handrails, kick plates below the doors, and the door handles to match the prototype.

Two interior plastic inserts (one on each side) are used for the cab windows and the side panels for the engine cooling compartment. The grill and frame detail is on the exterior of the glazing.

Of course, the big difference this time around is the decoder. The TSU-KN2 fits neatly on top of the split-frame mechanism. Two purple wires run from the decoder to the speaker in the fuel tank. The wire connections are soldered.

The list of default functions (F0 to F28) can be found in the *Tsunami2 Digital Sound Decoder Diesel User's Guide*, available at soundtraxx.com. The decoder has many of the usual sound features, including the bell, horn, and coupler crash. Head-end power mode can be activated using F16.

The modern passenger diesel has light-emitting-diode (LED) lighting. When the locomotive is set to forward, activating F0 (headlights) also illuminates the number boxes and ditch lights. Unlike the prototype, the ditch lights don't flash in an alternating pattern when the horn is activated; F7 is the headlight dimmer. Though there are red light tubes inside the shell for the front and rear markers, there are no LEDs on the decoder for them. Kato offers a lighting kit for the engine cooling compartment as item No. 11-211, sold separately.

George Bogatiuk III of SoundTraxx said there are solder pads near the front of the decoder that support LEDs if the modeler wants to separate the ditch lights for alternate flashing lights or control the number boxes independently. He also noted there are two pads for installing a capacitor.

I tested the decoder-equipped model at the workbench with an NCE Power Cab. From the box, the default address is

03. At step 1, the model moved at 12 scale mph. At step 28, the Charger hustled down the test track at 131 mph. That's slightly above the prototype's top speed of 125 mph. The ALC-42 has a drawbar pull of .8 ounce, equivalent to nine free-rolling passenger cars on straight and level track.

The addition of a SoundTraxx decoder takes the Kato passenger unit to the next level. With extra solder pads, modelers can dial in the light effects to match the Chargers found on today's Amtrak trains. — *Cody Grivno, senior editor*

Facts & features

Price: Direct current, \$140-\$150; Digital Command Control motor decoder, \$230-\$250; and DCC and sound, \$340-\$350

Manufacturer

Kato USA Inc.

100 Remington Rd.
Schaumburg, IL 60173
katousa.com

Era: April 2021 to present (as decorated)

Road names: Amtrak (Phases 6 and 7 in three road numbers each, Day One scheme in one number).

Features

- Body-mounted Kato knuckle couplers, .010" low on both ends
- Metal wheel stubs mounted on plastic drive axle gears, in gauge
- Weight: 4.4 ounces

Rapido N Santa Fe mechanical refrigerator



Looking for something cool to add to your N scale freight car fleet? Then you'll want to check out the Santa Fe Refrigerator Department (SFRD) class RR-56, RR-60, and RR-61 mechanical reefers from Rapido Trains. The models feature plastic construction, factory-applied details, and body-mounted couplers.

The 2,995-cubic-foot capacity class RR-56 cars (SFRD 2000-2019, 2020-2188, and 2500-2510) were built at the Atchison, Topeka & Santa Fe shops in Wichita, Kan., in 1955. Between 1958 and 1960, class RR-60 (SFRD 2189-2213) and RR-61 (SFRD 2214-2238 and 2239-2263) cars were constructed. The reefers followed the lines of the class RR-56 cars but had extra insulation.

Our review sample is decorated as SFRD No. 2164, part of the 2020-2188 series. As built, the car wore SFRD reporting marks. Between 1963 and 1965, the reporting marks were changed to SFRP. In 1979, cars from the 2020-2188 series were converted from mechanical reefers to insulated boxcars.

The Rapido refrigerator car has a one-piece plastic body with a mix of free-standing and molded details. The door rods, latches, and lower door track are a single plastic casting. The side and end ladders are also factory applied. On the B end of the car, the Champion brake wheel, hand brake, retaining valve, and brake platform are all separately applied.

Molded details include stirrup steps, grab irons, and route and tack boards. The bump-out along the roofline to the right of the running board on the B end is the diesel exhaust port.

A see-through, etched-metal running board with wire corner grab irons is

attached to the car's roof. From the box, the hatch cover for the roof vent on the B end is closed. A modeler-installed open hatch cover is included. The vent has an etched-metal grill.

The sides on the B end also have see-through grills. A Trane diesel generator, attached to the top of the underbody, is visible through the grills.

The underbody is a separate plastic casting. Two steel weights are attached to the top with screws. The bottom of the underbody has molded floor board, crossmember, body bolster, and center sill detail. The four 100-gallon fuel tanks and battery box are also molded.

A separate plastic casting for the AB brake system includes the air reservoir, brake cylinder, control valve, and related pipes, rods, and levers. The protection bracket for the fuel line is also depicted. Though much of the brake pipe is molded, the angle cock and air hose on both ends are factory-installed parts.

The model we received is neatly painted in its as-built scheme with Refrigerator Yellow sides and ends, Baltic Blue doors, and black side sill support tabs and underframe. The grayish-brown roof color depicts car cement covered with slate granules.

Graphic placement matches prototype images in *Mechanical Refrigerator Cars and Insulated Refrigerator Cars of the Santa Fe Railway 1949-1988* by John B. Moore Jr. (Santa Fe Railway Historical & Modeling Society, 2007). The dimensions of the N scale car closely follow data published in the book.

To see how the model performed in an operating layout environment, I put the refrigerator car in a train on our

Milwaukee, Racine & Troy State Line Route. The reefer ran without issue while being pushed and pulled around the layout's 18" radius curves and through the No. 6 turnouts.

Rapido offers the class RR-56, RR-60, and RR-61 mechanical reefers in multiple paint schemes covering their service lives — the full-size BNSF rail train buffer car lasted until 2009! Regardless your modeling era, these cars will add a splash of color to your 1:160 rolling stock fleet. — *Cody Grivno, senior editor*

Facts & features

Price: Single car, \$41.95; four-pack, \$167.80

Manufacturer

Rapido Trains
382 High St.
Buffalo, NY 14204
rapidotrains.com

Era: 1955 to 1963-1965 (as decorated)

Road names: Santa Fe Refrigerator Department (SFRD reporting marks [RR-56, RR-60, and RR-61] and SFRP marks [RR-56] in multiple paint schemes); Atchison, Topeka & Santa Fe (RR-56, silver maintenance-of-way scheme); and Burlington Northern Santa Fe (RR-56, silver rail train buffer car scheme).

Features

- 33" metal wheelsets, correctly gauged
- Body-mounted couplers, at correct height
- Weight: 1.2 ounces, .1 ounce too heavy per National Model Railroad Association Recommended Practice 20.1

Bachmann HO Trinity 5161 covered hopper



A Trinity Industries 5,161-cubic-foot capacity three-bay covered hopper is now part of Bachmann's growing lineup of modern HO scale freight cars. The injection-molded plastic model features screw-mounted roller-bearing trucks, metal wheelsets, and body-mounted E-Z Mate Mark II couplers.

The 5161 covered hopper has been part of the Trinity Industries (now TrinityRail) catalog since 1995. Since its debut, more than 33,000 cars have been built. The three-bay covered hoppers are used to transport dry chemicals, grain, and sugar, among other products.

Our review sample is decorated as BNSF Ry. 475172, part of the railroad's 473500 through 476304 series built by Trinity at its plant in Monclova, Mexico, between November 1998 and December 1999. The cars are still in service today.

You can learn more about the prototype cars in my article "Trinity's popular 5161 covered hopper" in the March 2023 *Model Railroader*. The story includes HO scale drawings by Patrick Lawson.

The Bachmann model has a one-piece plastic body with molded end cages and hatch covers. The slope sheets are factory-installed plastic parts, as are the brake wheel and see-through plastic running boards.

The underbody is a separate casting. Four tabs (two per side) fit into corresponding slots on the inside of the body. A metal weight is attached to the top of the underbody with screws.

Freestanding underbody details include the air reservoir and brake cylinder; the control valve is molded. Plastic auxiliary and emergency reservoir pipes

run from the air reservoir to the control valve. The B end also features a lever/slack adjuster; the A end has a freestanding casting depicting the lever, rod, and lever support.

A mix of molded and factory-applied parts were used on the bays. The shaker brackets are molded; the outlet gates are separate plastic parts attached with glue.

The draft-gear boxes are molded as part of the underbody. The screw-mounted plastic covers have two mounting holes on the edge that support a free-standing air hose.

The model we received is neatly painted in BNSF's mineral red scheme with as-delivered white sill stripes and yellow FRA-224 stripes, the latter applied between 2005 and 2015.

I found prototype images of car 475172 online. For the most part, lettering placement follows the full-size car. The bay letter and capacity stencil should be directly above the shaker brackets, with the "Clean inside grooves..." stencil above that.

Though the load limit and light weight don't match the prototype, they're well within the range of other cars in the series. The yellow warning stencil to the left of the Trinity Industries logo is a bit oversized; the one to the right isn't needed (the "Clean hopper slides..." stencil, spread over two lines, should be in that spot). The build date in the COTS panel shows 05-99, but it should be 12-99.

The full-size covered hopper is a phase 3 car with 12 body panels and 12 running board supports. The Bachmann model is based on a phase 2 car with 10 body panels and 17 running board supports. Of the four paint schemes offered,

the model most closely matches those decorated for CSX.

I compared the model to the prototype drawings in MR and information on the TrinityRail website. The Bachmann model matches or is within scale inches of published dimensions.

The Trinity 5161 three-bay covered hopper has been a popular subject for hobby manufacturers. Though Bachmann's entry isn't offered in multiple body styles and lacks the same level of freestanding details as cars from other companies, the model captures the lines of the prototype and will stand up to regular handling on operating layouts.

— *Cody Grivno, senior editor*

Facts & features

Price: \$59

Manufacturer

Bachmann Industries Inc.

1400 E. Erie Ave.

Philadelphia, PA 19124

bachmanntrains.com

Era: 1995 to present (varies based on paint scheme)

Road names: Burlington Northern Santa Fe, CSX, Canadian Pacific Ry. (Soo Line reporting marks), and Norfolk Southern. Two road numbers per paint scheme.

Features:

- 36" blackened machined metal wheels, properly gauged
- E-Z Mate Mark II plastic couplers, at correct height
- Weight: 4.3 ounces, .6 ounce too light per National Model Railroad Association Recommended Practice 20.1

HO scale



Scale test cars. These new WalthersProto models are decorated for Burlington Northern, Canadian National, Archer Daniels Midland, Chessie System with Chesapeake & Ohio reporting marks, Conrail, Rock Island, and Union Pacific in one road number per scheme. The HO scale test car, priced at \$49.98, is also available painted gray with data only. Product features include die-cast metal construction, prototype-specific hand brake and side access doors, wire grab irons, photo-etched brass placards as appropriate, and Proto-Max metal couplers. Wm. K. Walthers Inc., 414-527-0770, walthers.com

100-ton roller-bearing trucks with 36" machined metal wheels. Minimum radius, 9 3/4", recommended radius, 11". Without sound, \$49.99; with Sound Traxx sound, \$99.99. Athearn Trains, 800-338-4639, athearn.com



- **50-foot double-door boxcar.** New road numbers: Duluth, South Shore & Atlantic; Erie; Great Northern; Illinois Central Gulf; Missouri-Kansas-Texas; and Louisville & Nashville. New paint scheme: Toledo, Peoria & Western. Two numbers per scheme. Fish-belly side sills, diagonal-panel roof, improved Dreadnaught ends, solid-bearing trucks, and Accumate couplers. Trainman series. Atlas Model Railroad Co., 908-687-0880, shop.atlasrr.com

Z scale locomotives



- **Electro-Motive Division SD60 diesel locomotive.** Canadian National. Two road numbers. Prototype-specific details, light-emitting-diode lighting, blackened metal wheels, traction tires, AutoLatch couplers, and optional truck with coupler. Contact manufacturer for pricing information. American Z Line, 614-764-1703, americanzline.com

Z scale freight cars



- **Association of American Railroads 40-foot modified 1937 boxcar.** St. Louis-Southwestern (Cotton Belt). Single car and two-pack. Etched-metal running boards, positionable doors, blackened metal wheels, and AutoLatch couplers. Contact manufacturer for pricing information. American Z Line, 614-764-1703, americanzline.com

Continued from page 11

Conrail, CSX, Metra, Norfolk Southern, Reading & Northern, and Union Pacific. Also offered painted white but unlettered. \$34.95 to \$37.95. Atlas Model Railroad Co., 908-687-0880, shop.atlasrr.com

HO scale structures



- **Tudor house.** Plastic kit. Front entry has molded awning. Separate rear entrance with stoop and basement windows. Also includes utility meter, downspouts, and printed interior sheet. Measures 5 15/16" x 5 7/8" x 4 1/16". \$41.98. Cornerstone series. Wm. K. Walthers Inc., 414-527-0770, walthers.com

N scale locomotives



- **Electro-Motive Division GP38-2 diesel locomotive.** New paint schemes: Canadian National, Alton Southern,

Amtrak, Norfolk Southern (high short hood), Union Pacific, Vermont Ry., and Wheeling & Lake Erie (high short hood). New road numbers: CSX. Directional lighting, blackened metal wheels, and Accumate couplers. Direct-current model, \$177.95; with DCC and sound, \$292.95. Master Line. Atlas Model Railroad Co., 908-687-0880, shop.atlasrr.com



- **Norfolk Southern General Electric AC44C6M diesel locomotive.** Norfolk Southern (multiple paint schemes). Tall snowplow with m.u. hose openings; detailed cab interior; and factory-applied wire grab irons, train line hoses with silver glad hands, uncoupling levers, windshield wipers, mirrors, and sunshades. Direct-current model, \$159.99; with DCC and sound, \$264.99. Rivet Counter line. ScaleTrains, 844-987-2467, scalettrains.com

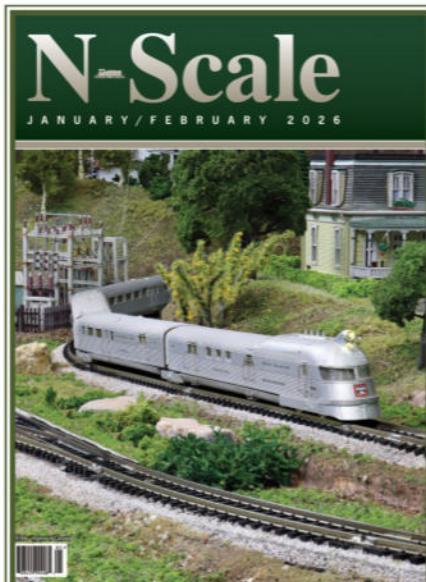
N scale freight cars



- **Fruit Growers Express 57-foot mechanical refrigerator car.** BNSF Ry., Burlington Northern, Conrail, and Union Pacific (white with ARMN reporting marks and yellow with UPFE marks). Two to three road numbers per paint scheme. Injection-molded plastic body, prototype-specific details, and

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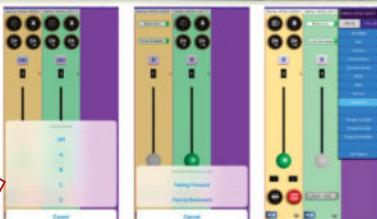


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The signals governing the Nickel Plate Road (NKP) crossing of the Peoria & Eastern and the west end of the passing track at Veedersburg, Ind., on Tony Koester's HO railroad can inform the train crews of a variety of track conditions based on the three-color head atop the mainline signal and the two-color center head on the siding signal. Tony Koester photo

Veedersburg, Ind., signals

Q The November 2025 cover of MR shows the signals for the west end of the Veedersburg, Ind., siding. The signal for entering the siding has no middle head, so the best it could display is slow clear, but the signal for leaving the siding has a middle head and only single targets for the top and bottom, so it's going to display a medium speed indication when cleared. Do other prototype switches have different speed restrictions for their diverging routes depending on the direction of travel or is this something unique to the NKP?

Keith Frantz

A The signals on my HO scale model railroad display aspects according to Nickel Plate Road practices. Here's how they're used at Veedersburg:

Eastbound trains encounter a two-head signal. The top head has red, yellow, and green lamps; the bottom head has just red and yellow lamps. The top head governs movements on the main line and the bottom head governs movements into the siding. If the siding switch is lined for the main, the Peoria & Eastern (P&E) crossing is clear, and the next two automatic signal blocks to the east are clear, then an approaching train will see green on the top head and red on the bottom head. (This is Automatic Block territory.)

If the first automatic block to the east is clear, but the next block is occupied, the signal will display yellow on the top head and red on the bottom head. If the siding switch is lined for the main but the next automatic signal block is occupied, both the top and bottom heads will be red. If the siding switch is lined for the siding, the P&E crossing is clear, the signal will display red on the top head and yellow on the bottom head.

Since the siding is non-signaled and is not a main track, the bottom head can display yellow even if there is a train in the siding. Of course, they'll see a red-over-

red if the Iowa Scaled Engineering Interlocking in a Box software has determined a (virtual) P&E train is due.

Westbound trains on the main get by with a two-head signal on the left-hand mast on the bracket signal, but the bottom head always displays red. If the switch is lined for the siding, the P&E crossing is virtually occupied, or the automatic signal block west of the interlocking is occupied, the signal will display red on both signal heads. If the siding switch is lined for the main, the P&E is clear, and the next two automatic blocks west of the interlocking are clear, then the signal will display green on top and red on the bottom head. If these same conditions are met except the second automatic signal block west of the interlocking is occupied, the signal will display yellow on top and red on the bottom.

Westbound trains leaving the siding are governed by a signal with three heads on the right-hand mast on the bracket signal. The top and bottom heads always display red; the middle head has green and yellow lamps. If the siding switch is lined for the main, or the P&E crossing is occupied, or the first automatic signal block west of the interlocking is occupied, the middle head will be dark, resulting in the signal displaying red-over-dark-over-red.

If the siding switch is lined for the siding, the P&E crossing is clear, and the next two automatic signal blocks are clear, then the middle signal head will display green resulting in the signal displaying red-over-green-over-red. If these same conditions are met except the second automatic signal block west of the interlocking is occupied, the middle signal head will display yellow, resulting in the signal displaying red-over-yellow-over-red. As with the eastbound signal, the mainline signal will display red-over-red and the siding signal will display red-over-dark-over-red if the Interlocking in a Box software has determined a (virtual) P&E train is due.

— Larry Ratcliffe and Tony Koester



Cody Grivno used scuff pads to model a distant tree line at Winter Hill on the HO scale Milwaukee, Racine & Troy. The technique was introduced by Lance Mindheim in the August 2009 *Model Railroader*. Bill Zuback photo

Q I've been trying to find the video Cody Grivno hosted a few years ago where he showed how to make a low-profile forest background using, I think, a furnace filter. I'm not talking about making furnace filter pine trees. This was more like cutting a continuous row of tree tops out of filter material and placing it directly against the backdrop. Any clues where I can find this video?

JPD, via the MR forums

A Back in the August 2009 *Model Railroader*, Lance Mindheim wrote "How to make a distant tree line with scuff pads." In that article, he introduced readers to Mirka Mirlon scuff pads. As the article's title suggests, he used the dark gray synthetic steel wool material as a stand-in for tree lines off in the distance.

I was intrigued by Lance's technique and wanted to put the scuff pads to use on our former Milwaukee, Racine & Troy layout. An opportunity presented itself when we worked on the Winter Hill quarry branch, a multi-part project layout series published in the January through April 2013 issues of MR. In the February installment, I shared how I used scuff pads, trees, and assorted scenery materials to model a distant tree line behind the MR&T main line.

In addition to the print article, I demonstrated how to use the scuff pads in part 7 of the *Build the Winter Hill quarry branch* series, available on Trains.com Video.

For another take on using scuff pads for distant tree lines, check out *Rehab*

My Railroad: Episode 1 featuring Chuck Sable's HO scale Chicago & North Western layout, which can also be found on Trains.com Video.

Q I'm hoping to start an HO layout featuring the modern era CSX in North Carolina or New York. Watching many trains on web cam and in person, I see a fact of life — graffiti. I don't like it, but I'm going to have to model it, especially on boxcars. Have there been any articles in MR on good techniques to use?

joecatch, via the MR forums

A Popular *Model Railroader* author M.R. Snell wrote "Do-it-yourself graffiti" in the April 2012 issue. In the article, he describes different types of graffiti and

demonstrates techniques for re-creating it, including paint markers and hobby paints applied with an airbrush. Though this may sound intimidating, his techniques are easy to follow and yield realistic results.

If you're looking for off-the-shelf solutions, consider graffiti decals like those offered by Blair Line, Circus City Decals, and Microscale, among others. They work like any other waterslide decal you would use for lettering a locomotive or freight car. Contributing Editor Pelle Søeborg shared how he used Blair Line graffiti decals in his article "How to weather white freight cars" in the November 2012 MR. In the story, he explains how to apply the decals over uneven surfaces, such as lower door tracks. This is an important skill that you'll need



Contributing Editor Pelle Søeborg added Blair Line graffiti decals to an HO scale refrigerator car from BLMA. Here he's using a rubber-tipped brush to help the decal fit around the uneven surfaces of the lower door track. Pelle Søeborg photo



Richard Snyder used the Bar Mills Scale Model Works Fenster's Farm Fresh kit to build this produce stand and warehouse. You can read more about the project in the March 2015 issue of *Model Railroader*. Richard H. Snyder photo

to develop as many contemporary boxcars have exterior posts.

One thing you've probably noticed while trackside and railfanning on web cams is that sometimes graffiti covers the road number, reporting marks, or other important data. Railroads may fully repaint these areas or patch over them. For an example of the latter, check out my article "Weathering freight cars with decals" in the January 2020 *Model Railroader*. In step 3, I show how to reapply the road number and put FRA-224 yellow stripes over graffiti.

All the best as you start your new model railroad!

Q I'm building the Fenster's Farm Fresh kit from Bar Mills Scale Model Works. Some years ago, an article on this kit appeared in *Model Railroader*

magazine. Can you tell me which issue it was in?

Hank Dabek

A Tracking down past magazine articles is something we're always happy to help with in the Ask MR column. The story

you're thinking of is "Getting the most out of a wood kit" by Richard H. Snyder. The article can be found on pages 48-53 of the March 2015 issue of *Model Railroader* magazine.

As reference, indexes for *Model Railroader* from 2005 to the present can be found on our website. Go to the MODEL RAILROADER MAGAZINE pull-down menu at the top right of the page, then select ANNUAL INDEX.

To search for articles from MR, *Classic Toy Trains*, *Classic Trains*, *Garden Railways*, and *Trains*, along with other model and prototype magazines, visit rrmagazineindex.org.

Q Which issue of *Model Railroader* has a review of the HO scale GP16 from InterMountain Railway Co.? I have looked through my back issues but keep failing to find it.

Mike Durhan

A The review can be found on page 12 of the January 2025 issue. In addition, if you go to Trains.com you can see a video of the Seaboard Coast Line rebuild in action on our Winston-Salem Southbound Tar Branch layout.



The InterMountain HO scale GP16 is based on units rebuilt by the Seaboard Coast Line. Read a review of the model in the January 2025 MR. Cody Grivno photo

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Reader feedback from past columns.

On page 20 of the September 2025 MR, Paul Buckley asked about stripping insulation off of small wire, and I have a tip. On 30AWG wire, I just score around the insulation between my thumbnail and finger, and then the insulation will just pull right off. This works if stripping about an inch or more of insulation.

A better way though, is to melt the insulation off with a soldering iron. This works well with those small wires used on pre-wired light-emitting diodes (LEDs). Use an old tip though, as you will dirty it up. And, depending on where you got the LEDs from, some have the insulation already pre-cut on the end of the wire, making it easy to remove. — *Lee Price*

To the suggestions you gave to Michael Ricci [Removing factory-applied lettering, October 2025. — *Ed.*], I would add using a chisel blade, bevel side down. Typically the ink forms a layer that can be sliced off, leaving much less to be removed with one of the other methods that you covered. Care needs to



Alex Schneider recommends using a chisel blade in a hobby knife, bevel side down, to help remove factory-applied lettering. Cody Grivno photo

be taken not to remove rivets or other details. — *Alex Schneider*

In November's column, Rich Bond had a question about the uncoupling magnet story in the August 2025 *Model Railroader*. Rich provided the following update, "I took apart the brush wand as described and no magnet! Further research showed that the magnet is only located in older Sonicare E-Series

brushes. The main differences between Philips Sonicare E-Series and other Sonicare series are the brush heads' attachment type (screw-on for E-Series vs. snap-on for newer models), plus other features of the newer motors." Thanks for that update, Rich. **MR**

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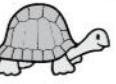
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Unit: LACoFD Squad 51



1973 Ward LaFrance Fire
Engine: LACoFD Engine 51



1965 Crown FireCoach:
LACoFD Engine 51



Airport Tanker: Gulf Aviation



NFI Xcelsior XN40 Transit:
Los Angeles Metro

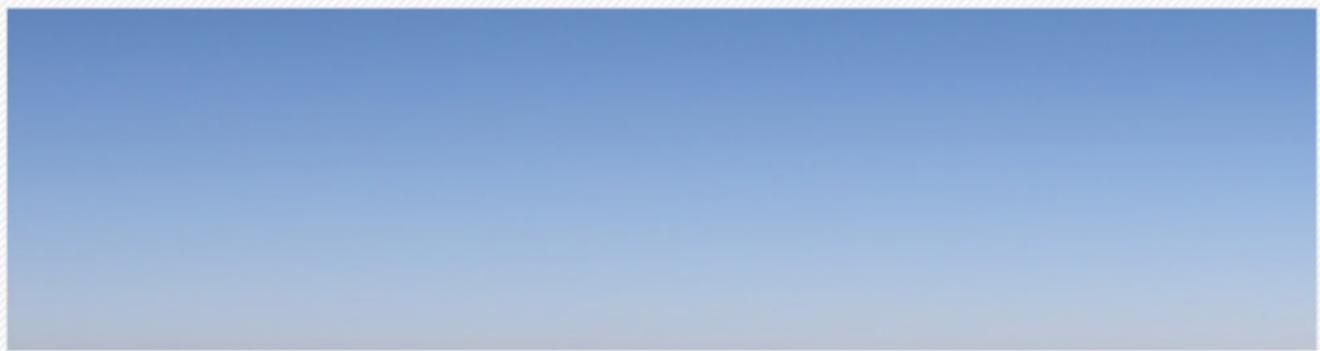
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Make your own photo backdrops



STEP 1 START WITH THE SKY



No, the image above isn't a mistake. I created the backdrop for my former HO scale Union Pacific Daneburg Subdivision layout in multiple layers. The first layer was the sky. My original sky photo wasn't wide enough to fill the entire backdrop, so I stretched it using the scale tool in Adobe Photoshop.

Had there been clouds in my picture it wouldn't have been possible to stretch the digital file in the same fashion. Why? Because the clouds would have been severely distorted. To work around this, I would have had to stitch numerous sky pictures together. Another option would have been to apply the clouds later.



The purpose of a backdrop is to give the illusion that a layout exceeds its actual physical space. It doesn't take much to create that illusion. Actually, you can go a long way with just a blue sky. However, some amount of distant scenery will create an even better result.

When adding a backdrop, keep in mind that the focus should still be the trains and modeled scenery. The backdrop shouldn't be the first thing visitors and operators notice when they enter the train room. Avoid spectacular landscapes and distracting elements such as clouds. Also pay attention to colors, staying away from bright tones. Remember, distance mutes colors.

Fortunately, you no longer need to be an artist to get a nice looking backdrop. The digital revolution has made it easy to

create realistic backdrops with basic photography and photo-editing skills.

The first step is to get out and take pictures. And not just one, but several. During a trip to Iowa and Nebraska, the setting of my former HO scale Union Pacific Daneburg Subdivision layout, I took pictures of the distant scenery. Since I live in Denmark, I made far more images than needed so I would have plenty of material to work with when I returned home.

In addition, I took pictures of small town main streets to extend the downtown Daneburg scene, shown at left. Since I didn't know how this would work on my backdrop, I took the pictures from different angles and used wide-angle and telephoto lenses.

When creating a backdrop, keep the horizon low. How low depends on

if you want to design it for viewing or for low-angle photography. On my previous layout the backdrop was designed to be optimal when viewed while standing. In pictures the horizon looked too high.

This time around I made the horizon lower. In pictures it looks perfect, but it's a little low when viewed while standing. A rule of thumb I follow is not to have a horizon higher than 3 to 4 inches, even if the backdrop is designed for viewing. On this backdrop, the horizon was only 1 to 1½ inches high, which gives the illusion of great distance in photos.

Follow along as I share how I made a photo backdrop for my Union Pacific Daneburg Subdivision layout. With digital files and photo-editing software, you too can create realistic backdrops unique to your model railroad.

Main Street in Daneburg on Pelle Søeborg's former HO scale Union Pacific Daneburg Sub was lined with a few 3D structures. To make the scene look deeper, he made a photo backdrop using digital images he took in Iowa and Nebraska. Photos by the author

STEP 2 LET THERE BE LANDSCAPE



Next, I turned my attention to the landscape layers. I selected one of my many landscape photos, removed the sky, and placed it on the next layer ①. I scaled the image so it was close to HO scale. You don't want any

object in the landscape layer, like a fence or a pole, to be bigger than 1:87.1. Objects can be smaller; they'll just look like they are farther away.

Next, I chose another landscape photo, removed the sky, and placed it

on the third layer ②. Since my landscape pictures were taken at different times of day — and in some instances on different days — the lighting wasn't the same between images. I adjusted the color on the field so it



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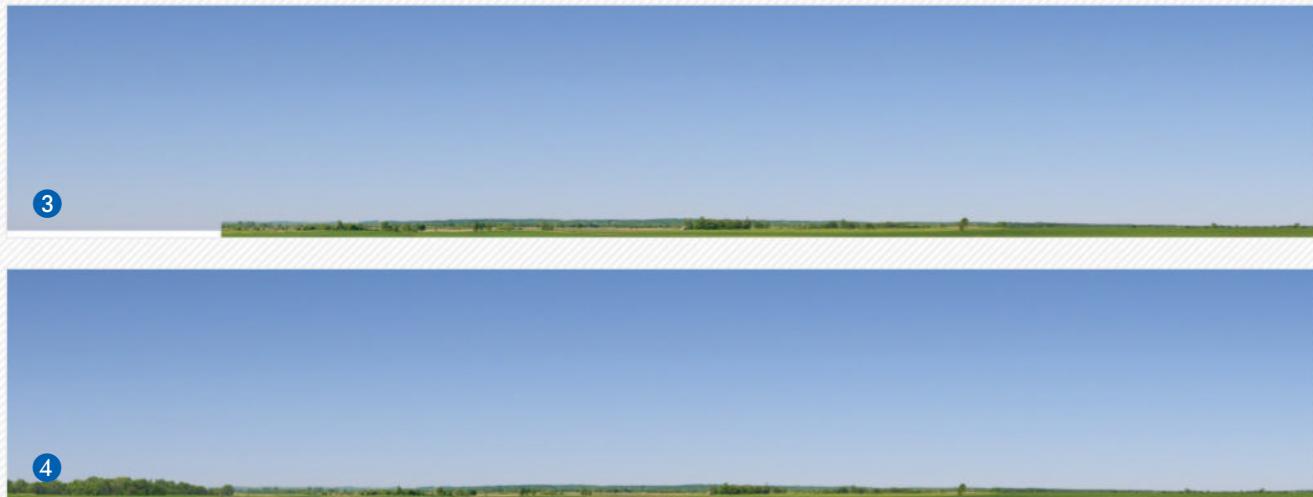
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STEP 2 LET THERE BE LANDSCAPE (CONT'D)



matched the colors on the adjacent layer. This can be done in various ways using Adobe Photoshop — I used curves.

In a new layer, I expanded the scenery with another of my landscape images ③. As before, I removed the sky and adjusted the color. I let the section edges overlap slightly and softened them to blend the seams together. I did this

by adding a layer mask. Then I painted a soft mask using the airbrush tool.

For the last layer, I used the same tree section I started with, but reversed it. The finished backdrop with most of the layers visible can be seen in ④. With that, it was time to head to the print shop.

STEP 3 FROM ELECTRONS TO REALITY



Before I had the entire backdrop printed, I had smaller test prints made to see how it looked under the lighting in my layout room ①. The sample at right was the first print-out. It turned out too red (and dark), so I adjusted the colors on the digital file. The second test print (left) turned out fine. The smaller test print is for the downtown Daneburg scene.

I had the print shop attach the backdrops to light-weight PVC boards. The boards come in various thicknesses — I chose 10mm (0.4") boards because they're rigid



enough to stand alone without any support. This was necessary because my staging is just behind the backdrop, so I couldn't mount any boards on the wall.

Since my layout is in sections, I had the backdrop produced in sections of the same length. I glued PVC tabs to the backs of the boards to create an interlocking system so they're flush at the joints when you push them together ②.

To avoid reflections from the layout room lighting, I had the prints coated with a flat film ③ (next page).

STEP 3 FROM ELECTRONS TO REALITY (CONT'D)



An added benefit of the film is that it protects the backdrops from ultraviolet light, which can lead to fading.

As you can see, I have sharp corners on my backdrop, which is more noticeable than rounded corners. This is because the 10mm boards I selected don't flex. If you want rounded corners, use 4mm or thinner PVC boards.



I had the backdrop piece behind my town scene printed out separately. I trimmed it so only the buildings and street were left. Then I glued it on top of the larger backdrop. Without anything in the foreground, it looked more like a movie set **4**. But I trusted it would look OK once the town buildings were built and in place.

STEP 4 PELLE'S TIPS AND TRICKS



Over the years I've developed some different tricks to make the transition between the layout and backdrop less noticeable. In **1** I used a couple of trees to camouflage the fact that the road ends at the backdrop. By using scenery materials in colors that match the backdrop, you can make the transition less jarring.

I had to make a cutout in the backdrop where the tracks enter staging. Initially, I placed a trees in the foreground to hide the opening, but it didn't help much **2**.

To solve the problem, I installed another piece of backdrop and a light source behind the PVC **3**. Though you can still see the cutout, it's not nearly as obvious as before.

If you need a backdrop for your layout, I hope you give these techniques a try. Though there's a bit of a learning curve, the time investment is worth it. **MR**



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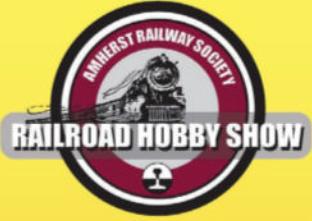




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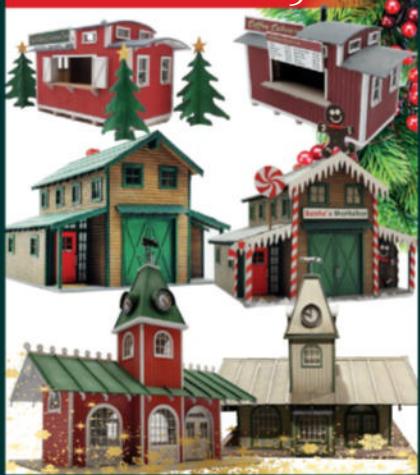
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Colorado & Southern No. 809 drifts downgrade across Dry Creek Trestle on Jim Ferenc's HO scale Colorado & Southern Northern Division layout. Jim scratchbuilt the trestle around the in-place track and roadbed to match prototype photos.

Scratchbuild a ballasted deck trestle

Build around in-place track to match prototype photos

By Jim Ferenc • Photos by the author

The Colorado & Southern Ry. main line crosses several creeks on pile trestles between Boulder and Longmont, Colo. These ballasted deck trestles have all of the drama of an open deck trestle but are easier to build. This was a plus as I had four trestles I wanted to model on my HO scale C&S Northern Division.

I photographed the prototype Dry Creek Trestle in 2012 ①. It was pretty weather beaten and was soon replaced with a concrete trestle. Its rare walkway, helpful for servicing a nearby spur, made it an appealing project.

Get ready to wrap

My scratchbuilt ballasted deck trestle "wraps" the in-place trackwork with bents below, a deck covering across the

front, and bulkheads at either end. To begin the build, I roughed in the Dry Creek streambed. I glued a level plywood base to the benchwork between the fascia and backdrop with yellow glue ②, opposite. I then marked the plywood

subroadbed edge with the centerlines of seven bent locations, including the bulkhead bents at either end, to create six equal spans. I glued scrap pieces of strip-wood or styrene below each mark to set the streambed profile.



① The prototype pile trestle has a ballasted deck and a walkway with a steel cable railing on one side as shown in this early spring view.

I finished the streambed shape with plaster cloth, flush with the fascia and with a slight fillet up to the backdrop. I smoothed on Sculptamold and painted it with my base scenery color. I dusted the paint with sifted dirt while still wet and achieved a result I was happy with ③.

To disguise the visible underside of the plywood subroadbed, I stained it with burnt umber oil paint thinned with mineral spirits.

Bent building

I built a bent jig to hold styrene in position for assembly by gluing the bent template drawing to a scrap of plywood with white glue ④, next page. I placed a .188" square styrene strip over the bent cap in the drawing and glued .100" square stripwood lengths to the drawing to hold the styrene in place. I carefully avoided getting glue on the styrene. I laid .188" diameter styrene tubing over the piles and glued stripwood to hold them as well, removing the styrene when dry.

Then I sanded .188" square styrene strips and .188" diameter styrene tubing for texture. I carved the wood grain by holding a razor saw blade perpendicular to the styrene and dragging it lengthwise down the piece. I dug a knot here and there with the tip of a knife blade.

I started each bent by cutting a cap beam to length from the .188" square styrene. Because the prototype cap beams are built using two narrower beams, I cut a groove on the end of the cap beam, visible in the photos. I carried the cut onto the top and bottom to complete the illusion.

I measured the distance from the bottom of the subroadbed to the terrain below at each bent centerline mark on the subroadbed edge. Subtracting the .188" height of the bent cap, I cut six piles from the .188" diameter styrene tubing for each bent, matching the angles in the bent template. See the cap and piles at the top of ⑤, page 49.

Securing the cap beam in the jig, I generously brushed the pile tops with styrene cement and pressed them home against the cap beam, using the jig to guide alignment. I firmly pressed each pile to squeeze out any gap between pile and cap.

With the bent still in the jig, I added a diagonal sway brace to bents taller than 5 scale feet. To do so I sanded .040" x .100" styrene strip and cut it to length so it reached across the bent. After letting it dry, I removed the bent from the jig and added the brace on the other side.



② Jim installed a level plywood base, and then marked the trestle bent locations on the plywood subroadbed. He put scrap stripwood or styrene sheet under each location to establish the streambed contour.



③ Jim roughed in the scenery beneath the trestle with plaster cloth, Sculptamold, paint, and sifted dirt. The backdrop captures the Dry Creek Valley countryside in 1958, the era of his Colorado & Southern layout.

Since I model 1958, I wanted a slightly weathered creosote look. I let the bents dry for an hour, and then sloppily brush painted them with white acrylic. I let the paint dry overnight then lightly applied a wash of burnt umber acrylic for color and to bring out the grain and knots. I streaked and dabbed the wash to avoid a uniform color.

I checked the results under room lighting and applied additional washes as desired. Less is more — see the middle two bents in ⑤. This paint-white-then-wash technique is my go-to method to make styrene look like wood.

To finish off the bents, I added scale 3" nut-bolt-washer (n.b.w.) castings on both sides as seen on the bottom two bents in ⑤. Bents without braces received two n.b.w. castings at each end of the cap beam.

I painted the n.b.w. castings with burnt umber acrylic. I drilled the casting positions by eye with a No. 74 bit; a quick touch of styrene cement secured them.

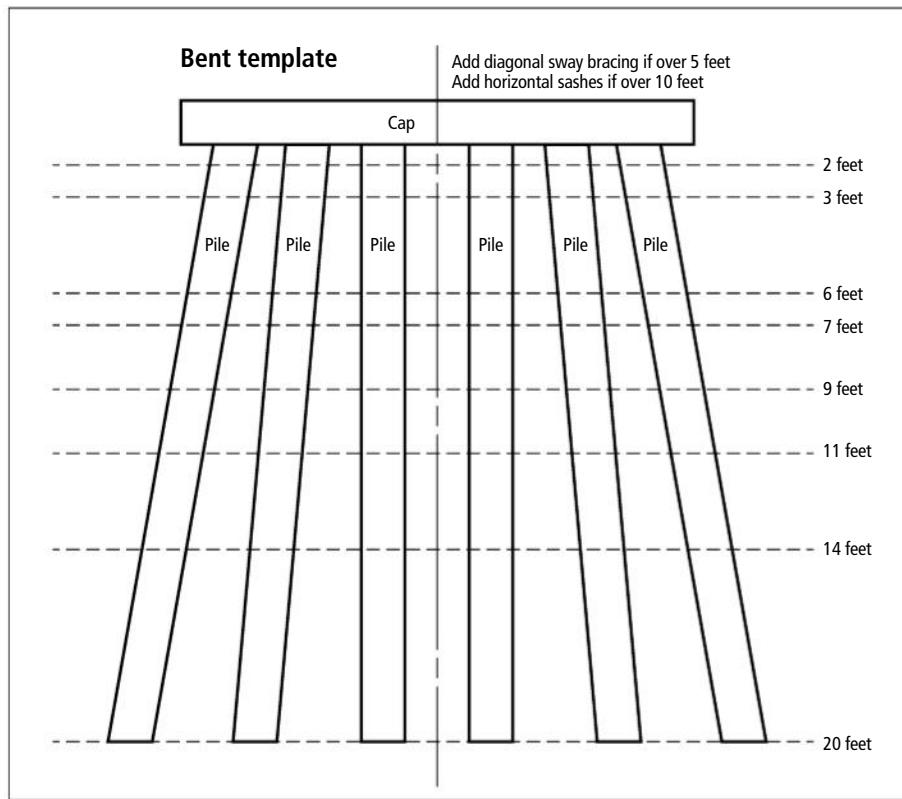
Building bulkheads

For each end of the trestle, I cut bulkhead planks from .040" thick V-groove styrene sheet. I fit them under the subroadbed just outside of the marked bulkhead bent centerline. The bulkheads on my bridge are just two planks tall, which I cut to length to match the terrain they "hold back." I had to cut some of the terrain under the planks to fit.

I sanded the planks with 150 grit sandpaper for texture, and continued the groove across the front edge and onto the back to give an individual look to the planks. I also sanded the edges a bit.

I brush-painted the planks with a concrete blend of white, dark gray, and burnt umber, followed by a light burnt umber wash.

To finish the bulkheads, I slid the planks into position and marked them one scale foot away from the subroadbed edge. Aligning the bulkhead bent with the mark and the top edge of the planks,



④ Jim assembled bents on a jig made from .100" square stripwood on a plywood base. He built dozens of bents of various heights for this and other trestles.

I cemented them into place as seen at the bottom of ⑤.

I glued each bulkhead to the bottom of the subroadbed with cyanoacrylate adhesive (CA) at each end of the trestle. I ensured the center of the bents aligned with the centerlines on the subroadbed edge, and that each was vertical and at 90 degrees across the subroadbed bottom.

Deck covering

I built the deck covering $\frac{1}{2}$ " high to mask the front edge of the plywood subroadbed. I began by sanding one .060" x .188", one .060" x .060", and two .060" x .125" styrene strips. Stacked in that order from bottom to top, they form the .060"-thick covering representing the stringer beams, deck flooring, and ballast retainers of the prototype. I cut the strips a bit longer than the distance between bulkheads.

I marked six equal spans and made shallow razor saw cuts across the .188"-wide stringer strip, representing individual stringers. I also carved extra grain by dragging the saw teeth down the length of the strip between each cut, carefully varying pressure and direction for each stringer. This enhanced the illusion of unique stringers.

Similarly, I cut shallow plank gaps every scale foot along the .060"-wide

deck flooring strip with a knife. I also randomly nicked and chipped the gaps, and slightly rounded the top and bottom edges by scraping with a knife to emphasize the stacked layers.

I slightly rounded the top and bottom edges of the two .125" wide ballast retainer strips, and scored shallow razor saw cuts across the strips every scale 10 feet. I carved grain as with the stringers and dug a few knots as well.

I cemented the four-strip stack together to form the .060" thick deck covering and used the paint-white-then-wash technique for the bents. I streaked and dabbed stronger washes to provide contrast between scored timber joints and to emphasize the deck flooring edges.

I glued the finished deck covering with CA to the front edge of the plywood subroadbed, ensuring it was flush with the bottom of the subroadbed and extended just beyond the bulkheads at both ends. The covering extends above the top of the subroadbed, but that was hidden by the walkway and ballast ⑥.

Installing bents

I test fit each bent in position under the scored stringer joints in the deck covering. I shortened some piles and scraped some terrain until each slid easily into position.

I glued each bent to the bottom of the subroadbed with CA. I ensured the center of the bents aligned with the stringer joints and that each bent was vertical and at 90 degrees across the subroadbed bottom. I also made sure that each bent protruded a scale 3" or so from beneath the deck covering. I filled gaps below the bents with acrylic caulk and touched up any scuffed paint on the bents with burnt umber acrylic ⑥.

Hold that ballast

I made a top row of ballast retaining timbers from a length of .100" square stripwood, 10 scale feet longer than the trestle length, rounded up to the next 10 feet. I prepared the wood with a single pass with the perpendicular edge of a razor saw to create grain, followed by brush-painting with burnt umber oil paint, trying for some variety.

To easily form small bolt heads in the timbers, I pressed a .020" diameter brass rod into the stripwood and clipped it off with a wire cutter ⑦, page 50. I pressed and clipped bolts in the center and near each end of enough scale 10-foot timbers to span the length of the trestle. I painted the exposed brass nubs with burnt umber acrylic paint.

I glued the ballast retainer timbers flush to the back edge of the plywood subroadbed with CA ⑧. For trestles without a walkway, I added a second set of ballast retaining timbers flush to the top front edge of the deck covering ⑨. With the timbers in place, I glued a bit more ballast between the track and half way up the timbers.

Finishing the bulkheads

I cut two more planks from the V-groove sheet styrene to match the ground contour above the bulkhead planking already in place. After sanding and painting to match, I cemented them to the top of the installed planking and reinforced the joint with a scrap piece of styrene on the back. I pressed the planks to the deck covering to close any gap.

For external bulkhead piles, I cut two lengths of $\frac{3}{16}$ " styrene tube to reach from ground to midpoint of highest plank, slightly tapering the top from back to front. After sanding and scoring, I sanded a flat on the back side and filled the tube top with acrylic caulk. I then painted the piles to blend with the bents. I finished the piles by installing n.b.w. castings to match the midpoint of the second and fourth plank of the bulkhead.

Materials list

Acrylicos Vallejo Model Color paints

70.862 Black Gray
70.941 Burnt Umber
70.951 White

Berkshire Junction

Fine EZ Line Rust

Evergreen Scale Models styrene (strips unless noted)

103 .010" x .060"
142 .040" x .040"
145 .040" x .100"
153 .060" x .060"
156 .060" x .125"
158 .060" x .188"
196 .188" x .188"
226 .188" round tubing
4125 040" V-groove styrene sheet

Krylon COLORmaxx spray paint

5582 Gray Primer

Northeastern Scale Lumber (HO scale)

HOSCAL8811 8" x 8" (.100" square)

San Juan Details

5099 3" nut, 4½" steel washer casting

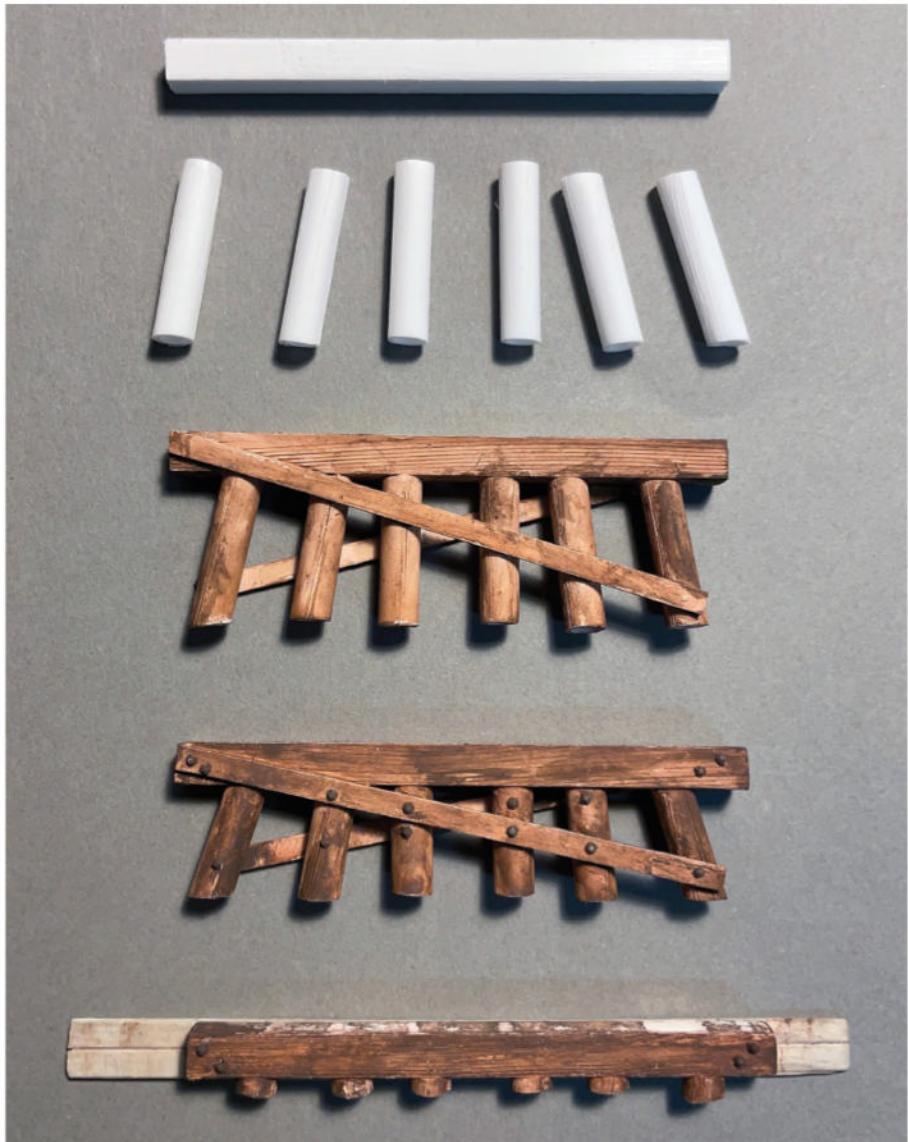
Miscellaneous

1/32" thick cardstock
burnt umber oil paint
mineral spirits

I cemented the bulkhead piles to the bulkhead planks, flats against the planks, near the outside extreme of the topmost plank. I cut an extra ballast timber into four suitable lengths and glued them in place on top of the bulkhead planks on both ends with CA. They're barely visible in 10.

Completing the scenery

Since the walkway is fragile, I finished the Dry Creek scenery first, using the techniques described by Trains.com Director David Popp in part two of his "Build a portable branch line" series published in the September 2013 issue of *Model Railroader* magazine. I filled any terrain gaps outside of the bulkheads with acrylic caulk and touched up terrain as needed. I used driftwood branches, static grass, field grass reeds, and foliage tufts to complete the Dry Creek streambed.



5 From top to bottom: styrene cap and piles for a bent, painted after assembly, nut-bolt-washer castings added, a short bent cemented to painted and weathered bulkhead planks.



6 Jim glued the bents to the bottom of the plywood subroadbed with CA. The bents align with the stringer joints scribed in the deck wrap. He used acrylic caulk to fill gaps beneath the bents; the middle bent awaits filling.



7 Jim pressed .020" brass rod into scribed and stained .100" square basswood to represent small bolts (left). He cut the rod as close to the wood as possible to finish each bolt (right). Jim inserted the bolts 9" on either side of 10 scale foot increments where timbers will be cut from the strip. He also inserted a bolt at the 5 scale foot center of each timber.



9 For trestles that don't have a walkway, Jim glued ballast timbers flush to the front edge of the deck wrap. He loosely placed a few timbers in this photo to show the effect.



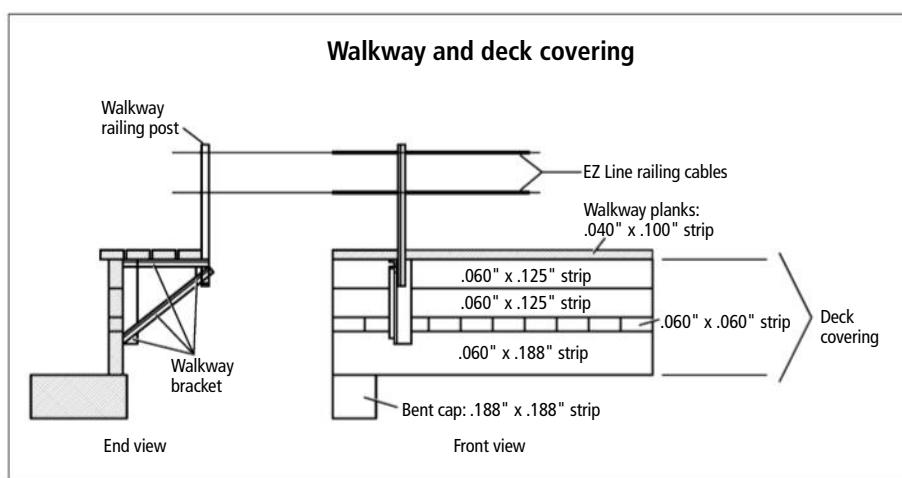
8 The finished ballast timbers were glued flush to the back edge of the plywood subroadbed with CA.

Follow along in the sidebar (opposite), but use plastic cement instead of a soldering iron.

After assembly, I spray-painted the brackets with gray primer, then dry-brushed with white and burnt umber acrylic paint. I finished with a light wash of burnt umber acrylic.

I glued the brackets flush with the top edge of the deck covering with CA 10. I glued the end brackets first, as far to the ends of the deck covering as possible. I then marked the distance between them into 10 equal intervals and glued the remaining 9 brackets centered on the marks.

Walkway and deck covering



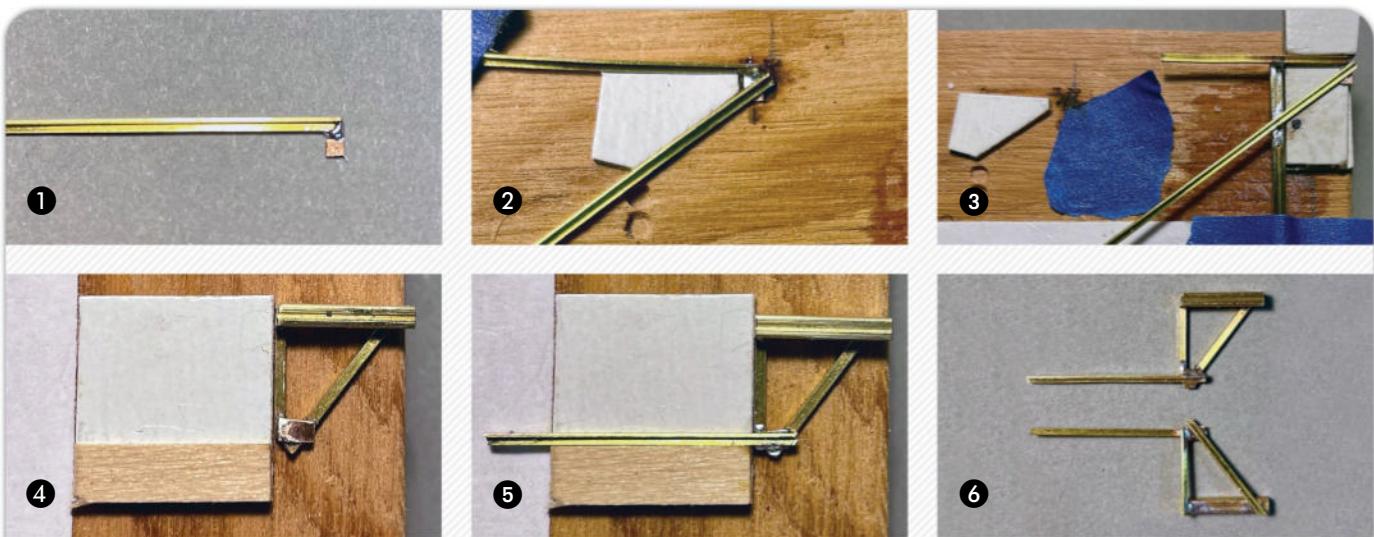
Walkway brackets

I built 11 walkway brackets from now-hard-to-find brass shapes I had on hand. I recommend using .010" x .060" styrene strip for the gussets, .040" square styrene strip for the brass angle stock, and .060" square styrene strip for the

square brass tubing that I used. I've added them to the materials list. (The more adventurous can fabricate styrene angle stock with .010" x .020" and .010" x .030" styrene strip.) The simple angle, vertical, and railing post jigs that I made from cardstock glued to plywood will work for styrene as well as brass.

I sanded and cut four lengths of .040" x .100" styrene strip 4 scale feet longer than the total length between end brackets. I scored each strip with a few "plank joints" aligned with random brackets, then dragged a razor saw between joints to give each plank an individual grain pattern. I dug a few knotholes with a knife, too. Once again, I treated all sides to the paint-white-then-wash technique.

I glued the planks to the brackets with CA, starting with the outer plank, ensuring it was tight to the railing posts. I used a .010"-thick styrene strip on edge as a spacer between planks as I worked. The final plank is glued to the top of the deck covering as shown in the walkway and deck covering illustration at left.



Assembling trestle walkway brackets

To build the walkway bracket angle, I first cut .060"-high by .100"-wide gussets from .005" brass sheet 1. I soldered them to the horizontal angle stock, with the pieces flush at the top and right edge. I then used an angle jig cut from $1/32$ " cardstock to align the diagonal and horizontal pieces for soldering 2. The top corner of the diagonal angle is flush with the right edge of the gusset.

Then I taped a $1/16$ " square tube tight to the edge of the vertical jig with the top aligned flush to the 90 degree angle and tinned two spots. The vertical jig is two thicknesses of glued cardstock to match the square tube thickness, with a third cardstock piece glued on top, forming a 90 degree angle 3. The black ink dot marks the location of the lower tinning point.

Holding the angle assembly tight to the edge of the top cardstock and the gusset's right edge flush to the right edge of the lower cardstock, I soldered the angle assembly to the square tube stock, completing the bracket 4.

After trimming the excess angle and square tube stock, I held the resulting bracket assembly against the cardstock edge of the railing jig ($1/32$ " thick stripwood at a 90 degree angle with cardstock edge) with the gusset up and the angles down. The lower edge of the gusset is flush with the top edge of the jig's stripwood 5. I tinned the railing post stock and then held it against the top edge of the stripwood. With the post extending slightly past the gusset, I soldered them together 6. That completes the assembly of the walkway brackets. — Jim Ferenc

Railing cable

I glued a length of Berkshire Junction EZ Line Rust elastic thread at the correct height on the inside of one end railing post with CA, then stretched it taut and glued it to the other end railing post to ensure a constant height along the entire trestle. I finished the first line by gluing the EZ Line to each intermediate railing post, and then repeated the process for the other railing cable. I randomly dabbed washes of burnt umber and white acrylic paint to thicken and weather the cable.

With the walkway and railing complete, I glued a bit more ballast on the front side of the track to meet the underside of the walkway. Now my engine crews can relax as they pound across a very sturdy Dry Creek Trestle. **MR**

Jim Ferenc lives in Boulder, Colo. His article "Build a working rotary order board" was published in the September 2024 issue of Model Railroader.



10 Jim finished the bulkheads with two more widths of concrete planks and a length of pile with n.b.w. castings. He added two short lengths of ballast timbers and glued the walkway brackets flush to the top edge of the deck with CA.



BUILDING A CRAFTSMAN WOOD CAR KIT

A few modern updates help bring this once-in-a-lifetime project to completion

By Jerry Dziedzic • Photos by the author



Western Union crews are maintaining the wires near Sussex, N.J., and the local spotted their material car at the freight house. Jerry Dziedzic had wanted to build an Ambroid 1-of-5000 kit since he was a youth, and finally got the chance.

Long before resin kits became popular for limited run models, I cut my teeth in the hobby by building wooden cars. Main Line Models were favorites for my paperboy's budget. A nearby hobby shop's shelves were well-stocked with them; one, a Chicago & Illinois Midland single-sheathed boxcar, remains on the layout though it needs repair. I admired the Ambroid 1-in-5000 kits produced by Northeastern Scale Models, but didn't attempt one until recently.

One of my photos has been begging to be modeled ever since I snapped it in the '70s. It's a Western Union material car I ran across in East Deerfield, Mass., on the Boston & Maine. The project began to take shape when I was researching my *On Operation* Western Union columns that ran in MR in December 2023 and March 2024. After several readers wrote me about their kits, a lucky eBay strike brought me my own 65 years after Ambroid released of the car.

Jim Doyle founded Northeastern in 1946, and he was a master craftsman who saw the need for high quality wood shapes and kits. The company continues, now doing business as Northeastern Scale Lumber. Its website notes that Jim's original drafting table still stands, honoring him. The Western Union kit showcases his ability in millwork, and it easily holds up to today's laser cutting precision. The car's major parts — underframe, inner roof, end blocks and sides — all fit well right out of the box.

It was fun revisiting wood construction techniques I used to enjoy. Deciding to update its detail to today's standards, I

substituted styrene for some difficult shapes and fragile pieces. Otherwise, out of respect for its heritage, I adhered to the original kit as much as I could. This produced a car of composite material and utilized various construction methods.

*Jerry Dziedzic wrote Model Railroader's *On Operations* column from April 2016 to December 2025. He models the New York, Susquehanna & Western in HO scale at his home in northern New Jersey.*

Materials list

Plastic options for wood

Evergreen 122 .020" x .040" =
Northeastern 020STR364
.020" x $\frac{3}{64}$ "

Evergreen 124 .020" x .080" =
Northeastern 020STR564
.020" x $\frac{5}{64}$ "

Plastruct AFS-1 $\frac{3}{64}$ " angle =
Northeastern 364ANG $\frac{3}{64}$ "

Evergreen

122 .020" x .040" roof ribs
123 .020" x .060" step riser
125 .020" x .100" step tread

9030 .030" sheet: center sill,
fish belly, and crossbearers
9040 .040" sheet: exterior roof

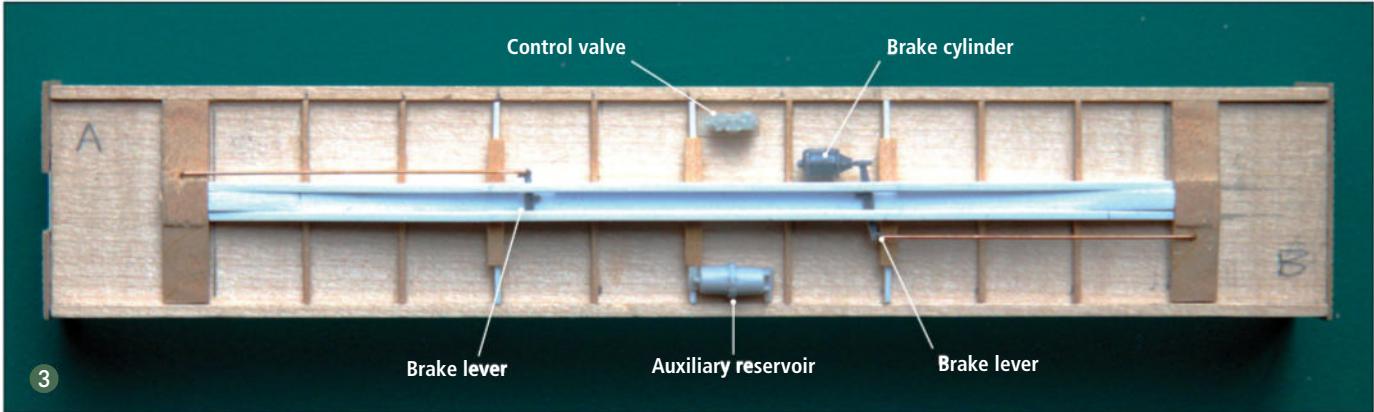
Kadee

158 scale head couplers
515 Vulcan double truss trucks

Owl Mountain Models

1010 roping staples
Tichy Train Group
3021 18" straight grab irons
3028 roof corner grab irons
Westerfield
1197 18" drop grab irons

STEP 1: A MODERN APPROACH



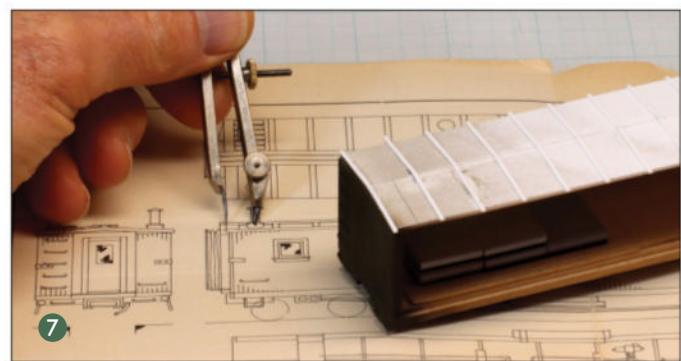
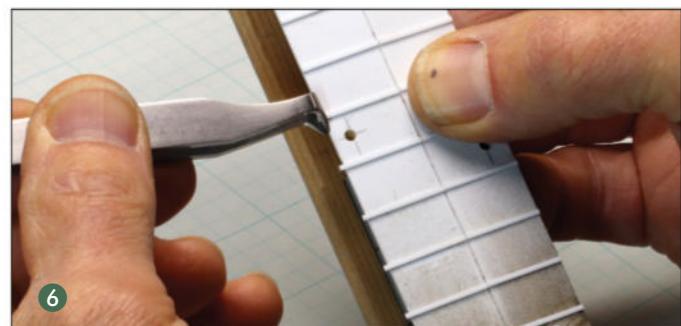
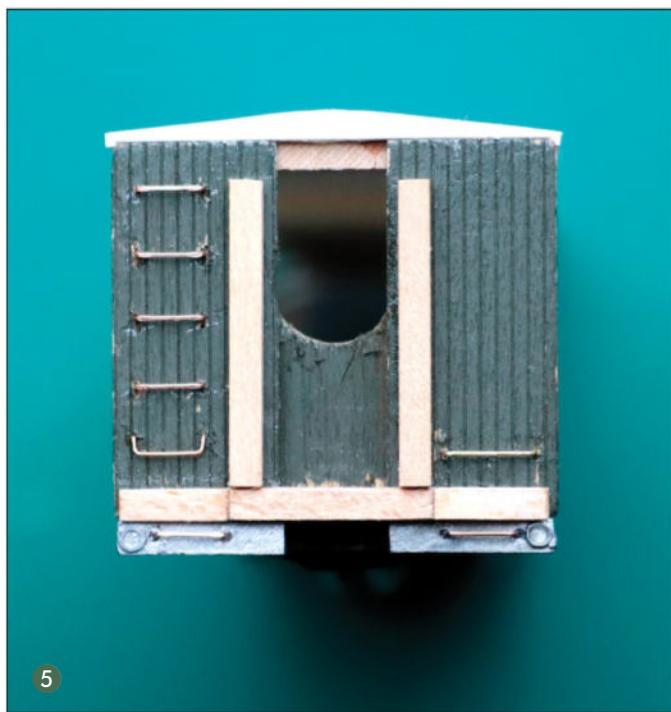
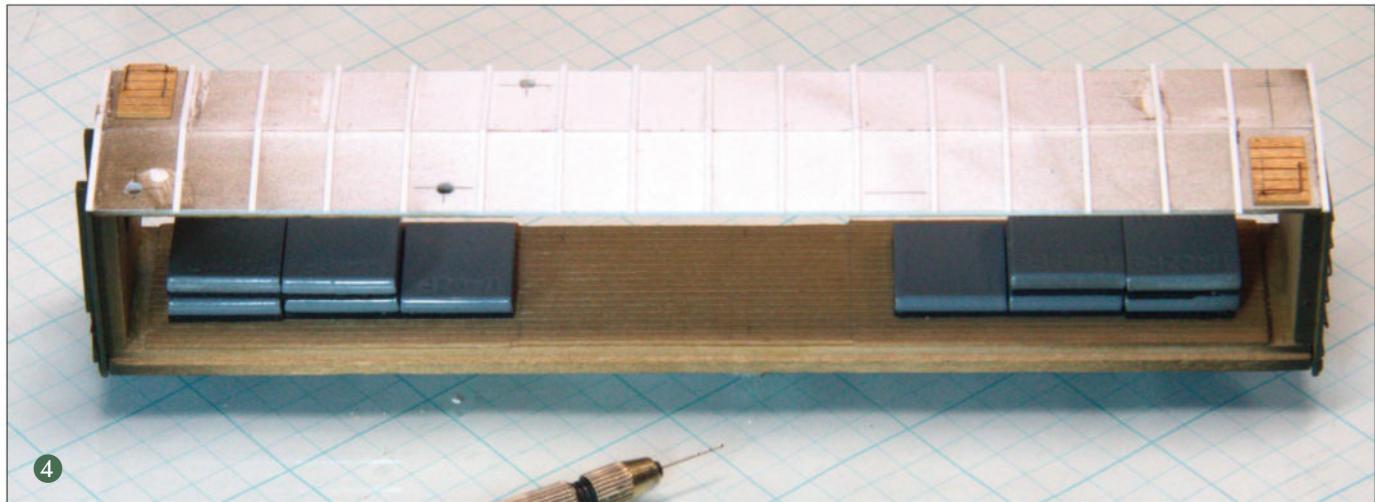
THE KIT INCLUDED pre-painted and lettered car sides, but all other exterior parts were bare wood and white metal castings. I had some Floquil Pullman Green, the original color, but I didn't want to rely on matching the sides. I wasn't satisfied with the lettering either, so I removed it by lightly sanding with 300 grit sandpaper and polishing with 2000 grit, both using the sanding block shown ①. (Paul Tupaczewski, my decal wizard, created new artwork.) Next, I sealed all the surfaces with several light coats of Deft Sealing Lacquer, rubbing them with 0000 steel wool and 600 grit sandpaper between coats.

The kit's directions suggested finishing the sides before placing them on the model. I tried framing the windows with the Northeastern material, but age made the wood so brittle it was difficult to cut and handle. I substituted Plastruct $\frac{3}{64}$ " angle and Evergreen strip styrene. The top window shows the work in progress ②. I cut the top piece oversize so I could

trim it to final dimension after completing the framing. The bottom window shows the finished frame, including the board below the sill. I joined these pieces with Titebond carpenter's glue, slightly thinned with water. I waited to glaze the windows until after painting the sides.

Next, I tackled the underframe ③. The drawings required careful study to see how the parts fit together. It's important to mark the A and B ends to maintain their proper orientation. I used Evergreen .030" styrene to fashion the center sill and fish belly. I cut templates from copies of the original instructions. I also edged the fish belly with Plastruct $\frac{3}{64}$ " angle. I used the kit's bolsters and combined stripwood and styrene for the crossbearers and crossties. I replaced the kit's brake castings with resin and Tichy parts. Finally, I added the interior floor, notching it to allow the side doors to slide open. I paid attention to the A and B markings and measured carefully because the car's side doors are off-center.

STEP 2: BUILD A BOX



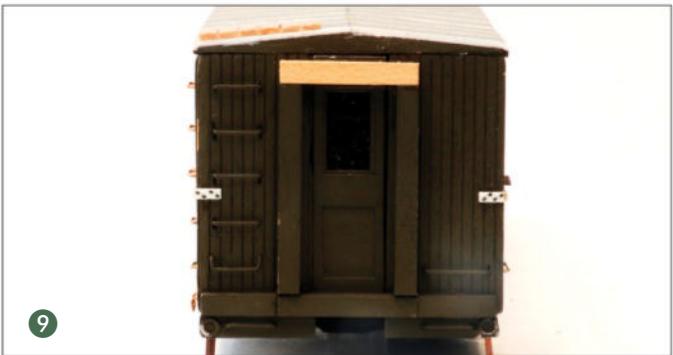
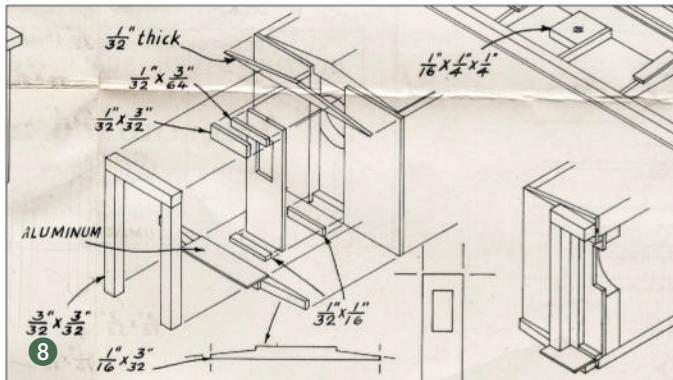
NEXT, I BUILT the basic box ④. I marked A and B ends on the inner roof and notch it to match the floor. I also checked that one of the sides fit between the inner roof and the underframe. I used full strength Titebond to join the ends with the inner roof and underframe, checking the box with a square. After the glue cured overnight, I fitted the end sill castings to the underframe and joined them with Elmer's Stix-All contact cement. I added 2.5 ounces of steel weights to bring the car up to NMRA standards. The weights are stacked on the inner floor and kept clear of the doorways. (Note: This photo also shows roof detail I added later.)

I added .020" styrene fascia atop both ends, leaving extra material to allow trimming after I'd added the outer roof ⑤. I sheathed the roof with .040" styrene sheet, fitting each half

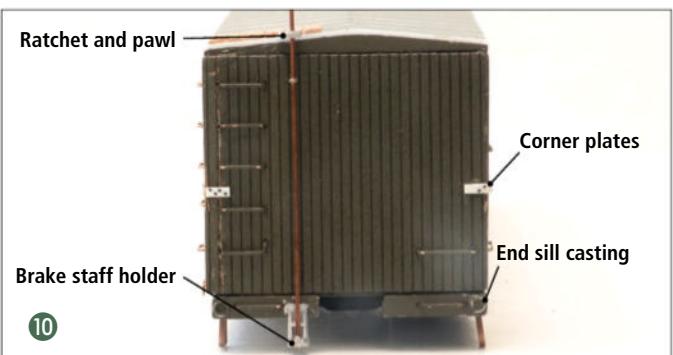
to length but making it slightly over width. I attached the styrene with Stix-All and sanded the roof edges to fit. I cut the ribs from Evergreen .020" x .040" styrene slightly longer than needed and positioned them with a machinist's square. I secured them with Testor's cement applied with a Touch-N-Flow applicator. When all the roof parts had dried, I trimmed the ribs to the roof edge ⑥ and cleaned up the excess fascia material with a fresh, single-edge razor blade.

I used a pair of dividers to transfer dimensions directly from drawings to the model ⑦. This eliminated errors that can develop by measuring them with a ruler. Here, I used them to locate the smokestacks on the roof. (Later, I used them to position decals accurately.) I drilled a No. 74 pilot hole, enlarged it with a No. 50, and finished it with a $\frac{3}{32}$ " bit.

STEP 3: WORKING OUT THE ENDS



9

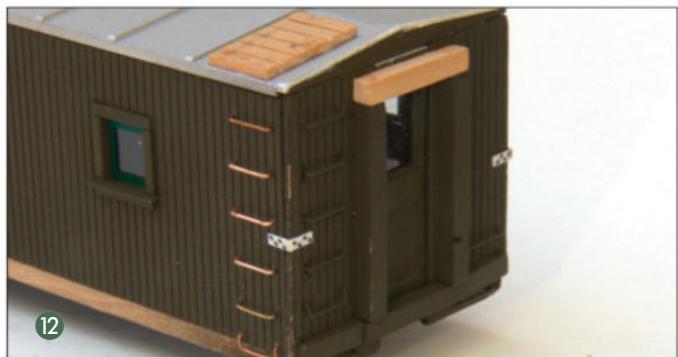


10

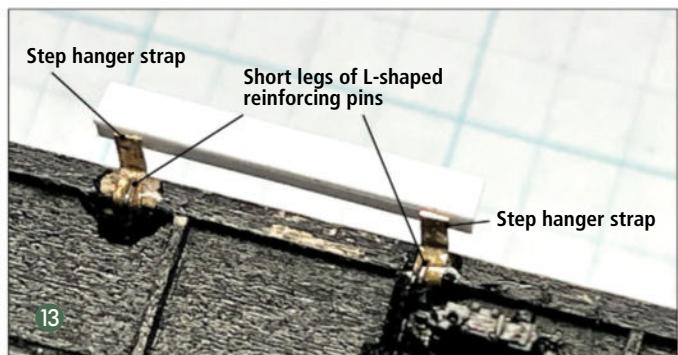
STEP 4: A LITTLE ON THE SIDE



11



12



13

THIS BROUGHT MY WORK to an end, the A end, in fact. Figure 1 from the kit's directions, 8, diagrams the assembly of the A end. Studying this drawing revealed a twist. It depicts a different end door than the prototype, which makes a case study in working from photographs! I built a new door from styrene. I assembled the buffer from three pieces cut from $1/16" \times 3/32"$ stripwood: left, center, and right. This made it easy to taper the left and right pieces properly as shown in the drawing. I mounted them on $.005"$ styrene to transfer the buffer to the end 9.

The B end needed work, too. Neither the plans nor photos revealed handbrake details, so I chose a prototype arrangement I'm familiar with. I made the top piece by trimming all but the ratchet and its pawl from a Tichy brake step. The brake staff holder on the end sill is a stock Tichy part. I used a Detail Associates eyebolt for a brake staff holder and threaded $.019"$ phosphor bronze wire through all three. I fastened a Kadee brake wheel with cyanoacrylate adhesive (CA) and trimmed the staff to the proper height 10.

I ADDED THE SIDES AND DOORS to the box with Titebond 11. The kit's grab irons were oversize, so I substituted Westerfield parts, adding custom sizes I bent from $.012"$ phosphor bronze wire. Note that the ladder grabs nearest the sills are drop grabs, not straight 12.

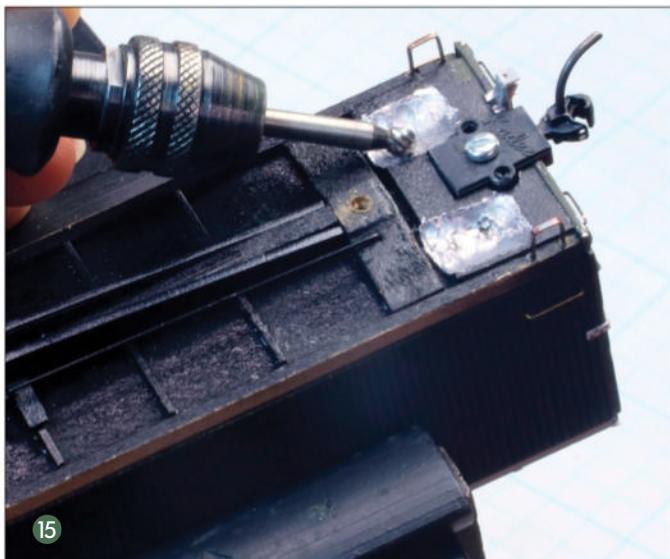
More detail I teased out of the photo persuaded me to paint the roof Tamiya Flat Aluminum, a good approximation for galvanized metal. I fastened the center step hangers with two-part epoxy. I used $.020" \times .060"$ strip styrene for the step riser and $.020" \times .100"$ strip for the tread. I fashioned the corner reinforcing plates from strip styrene and detailed them with Archer Fine Transfers rivets, which are being produced again (archertransfers.com/).

Seeing that the steps would be susceptible to mishandling, I left generous blobs of epoxy hidden at the joint behind the side sill, and I reinforced the hangers with L-shaped pins I made from $.015"$ music wire 13. The pin's short leg fits against the strap below the side sill; the long leg anchors the strap into the floor.

STEP 5: FINISHING UP



14



15



16

I STAINED THE WOODEN ROOF and end walks with Fiebing's leather dye 14. Modeler Perry Squier taught me the technique. I made a wash of one part black dye and four parts denatured alcohol and tested the color on wood scrap. Thinner is better than heavier; if the wash stains too lightly, more coats will darken it. I produced a sooty, weather-beaten look to the roof using a light coat of PanPastel.

With the project nearing the finish line, one of my parts boxes produced vintage Kadee draft-gear boxes. They're well-suited to the car because they appear to date to Kadee's introduction of its No. 5 coupler in 1956. I updated them with scale No. 158s, however. With the couplers and trucks mounted, I turned to the test track. My heart sunk when the car didn't roll freely because the wheel flanges rubbed on the metal end castings. Adding washers between the truck and the bolster didn't work without interfering with proper coupler height. Now what?

One doesn't stare down terror until he chucks a high-speed cutter in a Dremel handpiece to attack a once-in-a-lifetime build that's almost completed. Steeling myself, I dug

out four wheel wells one at a time as expertly as a dentist who doesn't bother with novocaine 15.

Adding a diaphragm to the car's A end stumped me. The Ambroid box contained a folded fabric piece and striker plate, but I stewed over fastening it in proper alignment. A quick internet search turned up a Chuck Hitchcock tip reported by Andy Sperandeo: flatten the fabric and slice off one full fold. Refold what remains and flatten it by rubbing with a steel ruler to "take some fight out of it," as Chuck explained. I dabbed two spots of CA at the top of the door frame and carefully hung the diaphragm. This made it easy to align its sides and fasten them to the door posts. All squared up, I added the striker plate 16.

At this point I was almost finished with the car. I brush-painted all remaining bare wood and metal parts. After allowing a few days of drying time, I prepared the carbody for decals by airbrushing three light coats of Microscale Micro Gloss. I used the dividers to help position decals. (Always work from a prototype photo!) A final coat of Testor's Dullcote made the car ready for service. **MR**

THE MR&T'S EAST TROY INDU



1 The MR&T's East Troy local returns to Mukwonago, Wis., after serving customers in the industrial park. This 14 x 19 foot HO scale project railroad features a lot of switching action. Cody Grivno photo

STRIAL PARK RR

This HO scale proto-freelanced project railroad features modern urban switching with a museum twist

By David Popp





After moving into our new office spaces in Brookfield, Wis., the *Model Railroader* team needed an HO scale layout on which to test products and shoot video. While we couldn't reproduce our former Milwaukee, Racine & Troy layout in any scale or scope of what we'd once had, we still wanted a layout that would capture the spirit of the MR&T. Given the compact spaces we had to work with, an industrial park switching layout seemed to fit that bill nicely.

Industrial park railroading has long been an area of interest to modelers. This type of railroad serves a concentrated group of businesses, and it may or may not be affiliated with a Class I line. Often an industrial park has its own railroad, or its tracks are served by a local company or nearby short line that maintains its connection with the national rail network.

Our HO scale Winston-Salem Southbound layout, featured in the January 2018 issue of MR, was one example of an industrial park railroad. The WSS was a small bridge

line railroad connecting the Norfolk & Western with the Atlantic Coast Line. The Southbound also had a branch line leading to a tight pocket of businesses concentrated over several blocks in Salem, N.C., forming an industrial park. These businesses included manufacturers, warehouses, and food distributors, and the WSS was their only railroad connection with the outside world.

It's this type of concentrated traffic that makes industrial park railroading popular with modelers. In a fairly small space, a well-thought-out industrial park can provide hours of modeling and operating enjoyment.

SMS connection

We used two different prototype railroads as our starting point for the new layout. One was the SMS Rail Lines' operation at the Pureland Industrial Complex in Bridgeport, N.J. The complex features more than a dozen modern manufacturing and distribution businesses set in a central location and served by the SMS, a Class III railroad. One of the biggest charms of the line is that the

SMS owns and operates a fleet of old Baldwin switchers to do some of the work. Another fun fact is that SMS uses its shops to do repair work for the Woodstown Central museum railroad — in fact, they've just rebuilt an 0-6-0 steam locomotive for that group.

We featured the SMS and the Pureland complex in 2016 in Charlie Conway's video series, *Taking Care of Business*, that members can watch on Trains.com Video.

A few of the industries that we thought we might be able to use from the SMS on our HO layout included The Home Depot Distribution Center, which receives both boxcars and flatcars of wood products, as well as several plastics plants, one of which makes plastic bags. Also of interest is the large transloading service area that transfers materials from tank cars, hoppers, and flats to trucks. And a fun, somewhat unique sort of business on the SMS is Central Ink, which receives ink in tank cars that it then repackages for distribution.

We spent a lot of time digging through Google satellite imagery to trace the tracks of the Pureland complex, and it

2 The MR&T shares the industrial branch with the East Troy Railroad Museum, who in our version of history, maintains a relocated Soo Line depot in Mukwonago.

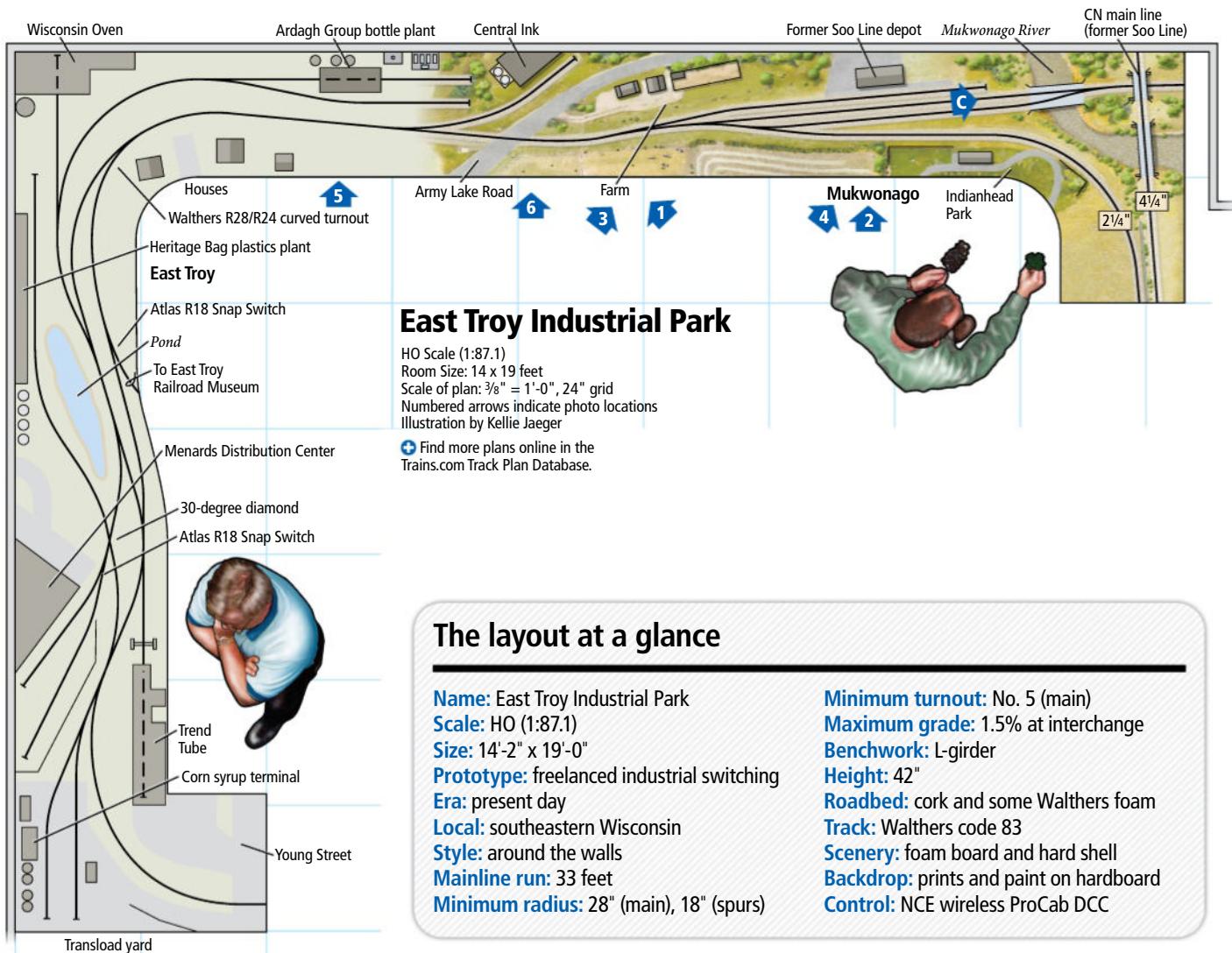
Cody Grivno photo

was interesting to see how businesses have come and gone, as well as how others have replaced them.

Municipality of East Troy

As shown with our earlier WSS example, industrial short line railroading isn't a new concept. In fact, East Troy, Wis., the setting for our project, once had its own short line freight railroad. Until 1939, one of The Milwaukee Electric Railroad & Light Co.'s interurban lines served the community's collection of businesses that required railroad access. In fact, arguably, while the small community only marginally used the passenger trains on TMER&L's daily schedule, its collection of businesses were grateful for the freight service it provided.

When the TMER&L announced it planned to discontinue service to East Troy in 1939, the town purchased its part of the line, which



East Troy Industrial Park

HO Scale (1:87.1)
 Room Size: 14 x 19 feet
 Scale of plan: $3/8" = 1'-0"$, 24" grid
 Numbered arrows indicate photo locations
 Illustration by Kellie Jaeger

Find more plans online in the Trains.com Track Plan Database.

The layout at a glance

Name: East Troy Industrial Park
Scale: HO (1:87.1)
Size: 14'-2" x 19'-0"
Prototype: freelanced industrial switching
Era: present day
Local: southeastern Wisconsin
Style: around the walls
Mainline run: 33 feet
Minimum radius: 28" (main), 18" (spurs)

Minimum turnout: No. 5 (main)
Maximum grade: 1.5% at interchange
Benchwork: L-girder
Height: 42"
Roadbed: cork and some Walthers foam
Track: Walthers code 83
Scenery: foam board and hard shell
Backdrop: prints and paint on hardboard
Control: NCE wireless ProCab DCC

connected to the Soo Line RR at Mukwonago, Wis., 6 miles away. Called the Municipality of East Troy RR, it offered freight-only service to its customers until 2003.

Although it no longer delivers freight, the line still exists and is owned and operated today by the East Troy Railroad Museum. The museum maintains the outside rail connection, now with the Canadian National, which owns the former Soo tracks through Mukwonago. The interchange track runs through a small park.

Businesses at one time served by the METRR included Baker Labs, East Troy Lumber, Standard Oil, and Trent Tube. Though most of those customers are long gone, the tracks leading to the



③ There's open farm land between the interchange in Mukwonago and the industrial park in East Troy. We included a bit of it on the layout to create scene separation. Cody Grivno photo

Trent Tube plant and newer Wisconsin Oven Corp. are still there, and both manufacturing concerns are alive and well today and could conceivably need rail service again in the future.

MR&T history

For those of you who are familiar with the old Milwaukee, Racine & Troy HO scale layout, you'll likely recognize some of the names

from the TMER&L's original interurban line, such as Big Bend, Mukwonago, and Lake Beulah. In fact, much of the MR&T's right-of-way was loosely based upon the TMER&L's line to East Troy



The East Troy Railroad Museum uses this imposing brick substation as its museum building and main depot. Three tracks run along the south side of the structure. The plan is to eventually add this to the layout with a removable extension. David Popp photo

and its proposed extension to Williams Bay and beyond.

While the original MR&T had a branch north out of Williams Bay to Troy, Wis., it was largely added by the staff to get a "T" destination into the railroad's name. The Milwaukee, Racine & Troy was a play on the brand names *Model Railroader* and *Trains*. However, East Troy was ignored by the original planners of the club layout, which was too bad, really, as the community has a lot to offer in most any railroad era.

From the time the Municipality of East Troy RR took over in 1939 and up into the 1970s, freight cars were handled using an electric freight motor. The line acquired a 44-ton diesel in 1969, and freight was then moved by diesel power until 2003. Today, the trolley museum maintains the property and the wires, running all sorts of regular services through much of the year. (You can learn more about it online at easttroyrr.org.)

With our new layout, we felt it was time to give East Troy some deserved attention

in the ever-expanding history of the MR&T.

East Troy Industrial Park

Part of the fun of making a freelanced model railroad is trying to get it as close to a prototype operation as possible, then tailor the layout to fit your space and situation. The concept is known as proto-freelancing. We felt that East Troy could lend itself well to this treatment, so using all that we learned about the town, the TMER&L and METRR lines, as well as SMS Rail Lines' New Jersey operation, we put together plans for the East Troy Industrial Park RR (ETIP).

Our design is for an L-shaped HO scale layout that measures 14 x 19 feet. The railroad has a 28" minimum curve radius on the main line and uses No. 5 turnouts or larger throughout. It features some of the East Troy Railroad Museum's main line and operation, small pieces of both the town of Mukwonago and East Troy, and assorted industries collected from SMS in New

Jersey and from southeastern Wisconsin. It also has an option to add more of the trolley museum through a plug-in addition at East Troy.

Freight service on the East Troy Industrial Park is handled by the Milwaukee, Racine & Troy. While set in modern day, this layout could easily be backdated to most any operating plan in the past 120 years with minor changes to the industry choices and structures.

Starting in Mukwonago

Starting at the far right of the railroad is the town of Mukwonago. On our layout, the MR&T operates over the museum's main line using trackage rights to reach the East Troy Industrial Park. It also features a mainline connection with the Canadian National Ry. (CN) for interchange traffic.

At first we kicked around ideas for making an all-new railroad to operate the East Troy Industrial Park, but we also needed some sort of replacement for the MR&T. Since the MR&T originally



4 The East Troy Industrial Park interchanges cars with the Canadian National next to this small park in Mukwonago. The museum maintains an interchange track here on the prototype as well. Cody Grivno photo

ran through Mukwonago on its first two versions, it made sense that it could maintain a connection to the trolley museum's tracks there too, and therefore use them to reach the industrial park.

The original TMER&L main line passed under the Soo Line at Mukwonago, so we've included that here as well [See the cover photo. — Ed.] It nicely opens the possibility for future expansion or a staging cassette, but for now, we'll assume that the MR&T branched off of its own main line and crossed



under the CN to reach the museum's right-of-way.

Mukwonago features a siding that can hold five 60-foot cars and an interchange track with the CN that can fit another 10. The interchange has a 1.5% grade to reach the main, but can also be used as a yard track on the layout to help crews sort cars. All cars entering and leaving the layout during an operating session begin or end on one of these two tracks in Mukwonago.

This end of the layout also features a depot and track for the East Troy Railroad Museum. The museum doesn't actually maintain a depot in Mukwonago but instead has simple platform to make stops at Indianhead Park, nestled in between the Mukwonago River and its



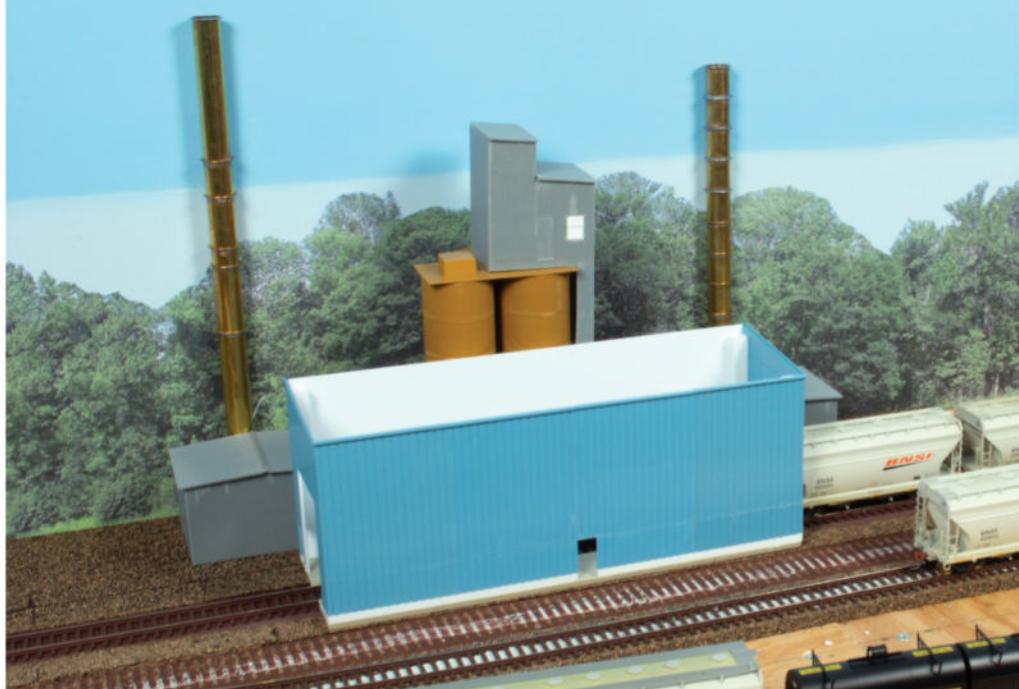
Although Wisconsin Oven Corp.'s plant in East Troy, Wis., is no longer rail served, the track is still in place, indicating that if it wished, the maker of industrial heat-treating equipment could once again receive and ship materials by rail. David Popp photo

junction with the CN. However, the former Soo Line depot in Mukwonago was located just blocks away from this location, and while it was torn down more than 50 years ago, we thought it

would be fun if it had been saved and moved. The website sooparts.tech offers a 3-D printed kit for the Soo Line Mukwonago depot, so we ordered one, and Cody built and painted it for the layout.

We plan to have one or more trolleys on the layout, complete with overhead wire, and this will serve as a good place to display them.

At roughly the middle of the layout, the museum's



5 The Ardagh Group's Burlington, Wis., plant (top) makes glass bottles for beverages and other packaging. On our layout, we've moved this factory to East Troy and it's being built by Editor Eric White as a series of low-relief backdrop structures. Photos by David Popp and Cody Grivno

trolley line makes a quick exit via an 18" radius curve off the front of the benchwork. There are a lot of details we'd like to model for the museum, including a car storage barn and the formidable brick substation building the railroad uses as its main depot. We hope to add this later by building a section that plugs into the front of the railroad.

East Troy industries

The East Troy end of the layout contains most of the operation. Starting at the far end of town is a corn syrup transloading terminal. SMS does big business in transloading materials, and it fit to

put something like that here. We still had the transload structures Andy Sperandeo built for the MR&T years ago, but they didn't survive the move well. Walthers has released a near carbon copy of Andy's terminal, so it will be an easy industry for anyone to model.

Next to the corn syrup terminal is an open space that we plan to use for further transloading activity. The SMS transloads just about everything, including aggregates, plastic pellets, propane, and various food commodities. With a few details and some trucks, we can spot virtually any car at this location, and we have the room to add

more tracks to it later if we choose to do so.

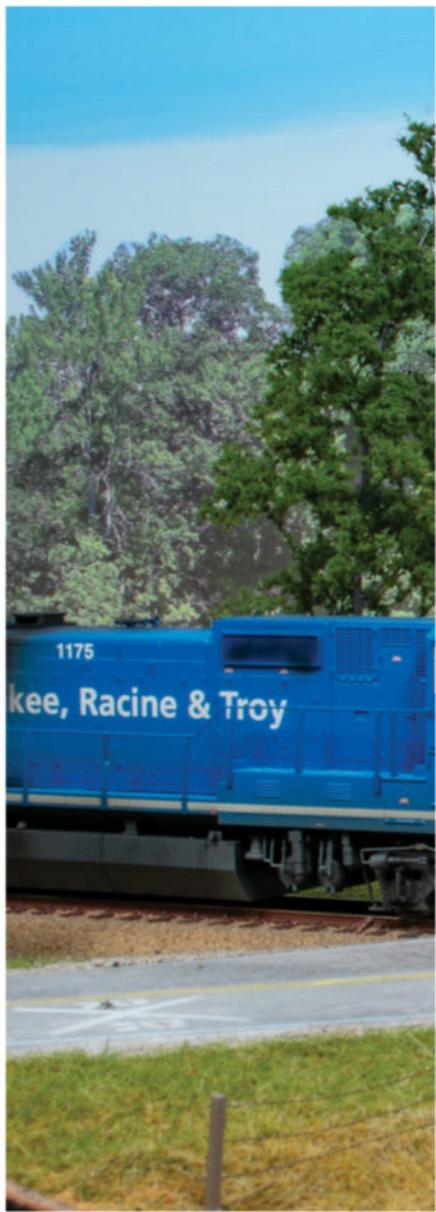
One building from the old MR&T to get a new lease on life is a foundry built by Art Curren. This cut-away structure was last seen in Mukwonago on the previous layout and is a staff favorite. We're using it here to represent Trent Tube in East Troy. Although it has little resemblance to its real-life counterpart, we're happy to include a piece of Art's fine modeling work on the new layout.

The next building in line is the Menards Distribution Center. Based upon The Home Depot facility in Bridgeport, N.J., as seen in Charlie's 2016 video, we

decided to make ours a Menards operation since the company is based in Wisconsin. We set the building on an angle in the plan, and included two tracks: One for boxcars and another for center-beam bulkhead flats.

Plastics manufacturers are just about everywhere, so we wanted at least one on the layout. Heritage Bag from SMS is a large, plain building with a row of plastic pellet tanks along one wall. It's constantly surrounded by pellet hoppers, and makes a perfect building flat along the backdrop. The spur is more than 6 feet long, so we can have several covered hoppers in the plant at once, much the same as the prototype.

In the corner is Wisconsin Oven. This is an East Troy



manufacturer of industrial ovens used in heat-treating processes. The plant occupies some of the old Trent Tube buildings, and while it's not presently rail served, all of the former tracks still exist. For our layout, Wisconsin Oven receives steel and components in boxcars and ships out large, finished goods via flatcars covered with tarps.

The largest industry in the East Troy Industrial Park is a transplant from nearby Burlington, Wis. The Ardagh Group makes glass bottles and other glass packaging products, and I've long had my eye on this industry as an ideal model railroad business. The plant receives raw materials used in the glass-making process in both trucks and two-bay covered hoppers.

There are always a number of these short cars on the spurs or in the unloading house. Part of the fun of switching a factory like this is keeping track of which cars the plant wants to unload next and which are to be shuttled off to the second track for storage.

Finally, we've included Central Ink Corp. as our last, compact industry. This business is from the SMS and has a spur for a single tank car. By placing the industry on an angle, much like the Menards warehouse, we curved the track from the main line to run alongside the building. On the prototype, there's just a single track and a dock with an overhead door, but I added a couple of tanks to our model to make it a bit more interesting to look at.

More to come

We're excited to have a new, operating HO scale layout in our workshop. Despite its deceptively simple footprint, the East Troy Industrial Park, with its maze of track-work, has already proven to be challenging to build and enjoyable to run.

And we've just scratched the surface on finishing the scenery and structures. Although most of the track is in and operational, as of this writing, just the scenery on the Mukwonago end is complete. Editor Eric White is deep into scratchbuilding the glass bottle plant, and I'm about to start on the trans-load terminal. Much like the larger MR&T before it, you can expect several years of

periodic articles and videos about the construction of various parts of the new railroad, with proper attention and detail given to each industry or scene as we complete it.

In the meantime, in the next installment I'll show you how we built the layout's benchwork. And Trains.com members can also watch the on-going video series covering the entire start-to-finish process for this HO layout.

There is a lot more ahead on the East Troy Industrial Park! **MR**

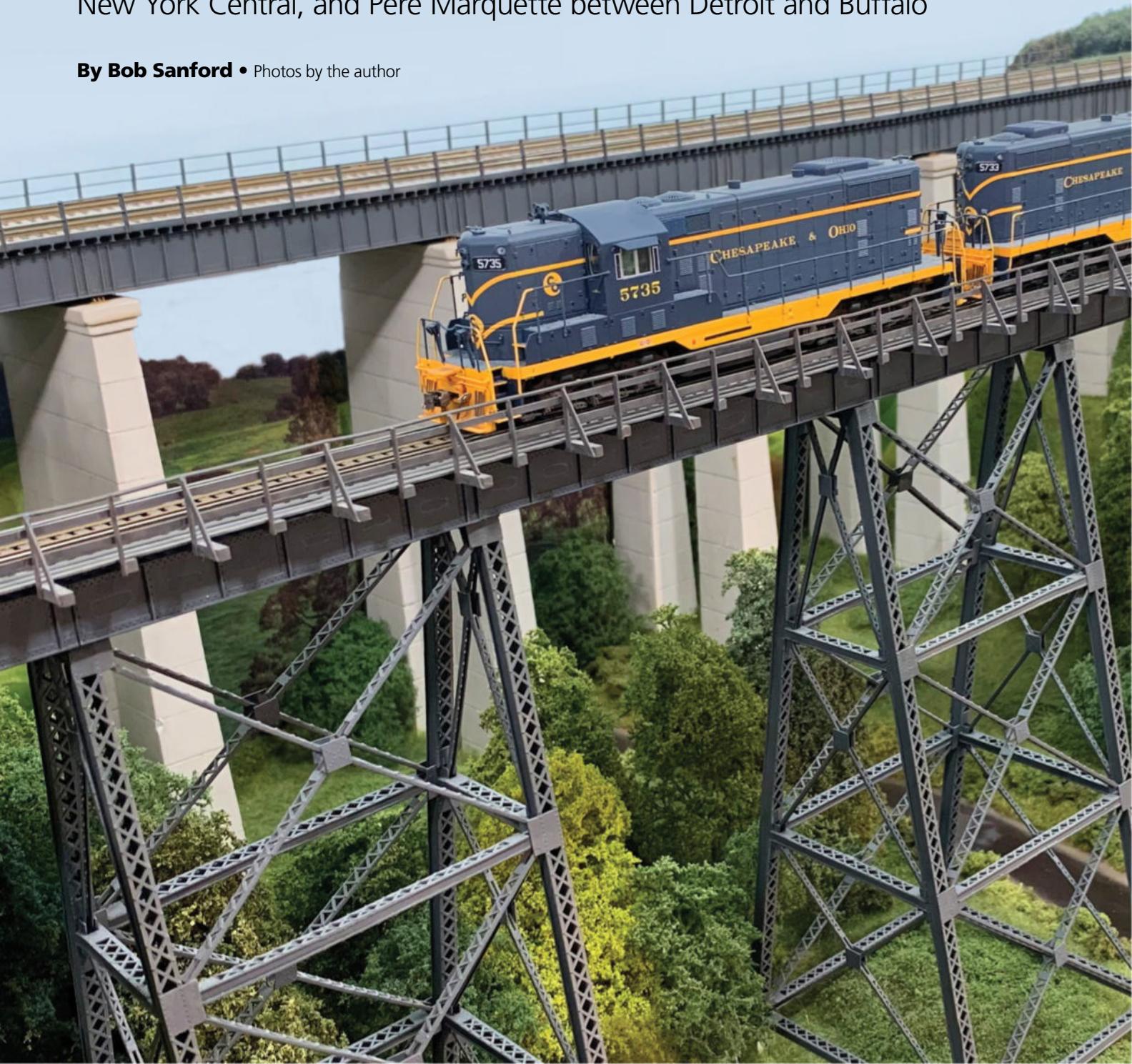
6 The one complete industry on the layout is Central Ink, a manufacturer and distributor of printing inks. David kitbashed the model from a couple of Walthers kits. Cody Grivno photo



Bringing the to southern Ontario

The Sun Parlour Lines features bridge traffic on the Chesapeake & Ohio, New York Central, and Pere Marquette between Detroit and Buffalo

By Bob Sanford • Photos by the author



trains back



Essex County is on the southernmost peninsula of the Province of Ontario extending toward Detroit and has always been an interesting collection of Canadian lines, local lines, and U.S. bridge lines along with electric streetcar systems, an interurban system, plus rail ferries and tunnel connections to Detroit. By 1955 the Chesapeake & Ohio and New York Central had developed their bridge connections to a high degree. These high-traffic lines acted as shortcuts for Michigan area business to connect directly to Buffalo and the U.S. East Coast as opposed to traveling around the southern shore of Lake Erie. It's these two lines I've modeled as they both served my hometown. The date I picked is Sept. 15, 1955. The Sun Parlour (English spelling for Parlor) Lines name for my collection of railways is derived from the term used by the local travel industry in reference to our county being the southernmost point of Canada.

Modeler's license was used to rationalize several of my wishes. The 1940s Pere Marquette passenger service from Grand Rapids to Detroit, for instance, was extended through southern Ontario to Buffalo. Kettle Creek, along with the NYC and C&O viaducts, was relocated from St. Thomas to my modeled area west of Blenheim. Essex County is flat, and I needed some bridges. The Windsor, Essex & Lakeshore interurban line was not closed in 1932, but remained in service until 1955. Also, some of the industries in Walkerville operated longer than in real life, i.e. Studebaker and Gotfredson trucks.

Construction begins

Construction of the layout commenced in December 2001 after we downsized and moved into a townhouse-style condominium. The train room downstairs was originally finished by the contractor with drywall and air supply

1 A pair of Chesapeake & Ohio Geeps crosses the C&O steel trestle over Kettle Creek on Bob Sanford's HO scale Sun Parlour Lines model railroad. The twin bridges were in reality about a mile apart. Bob moved them for his layout.



2 A modified Wm. K. Walthers Inc. kit serves as the Chesapeake & Ohio Walkerville station. The scratchbuilt Walker Power building on the right was the backdrop for many prototype photos of locomotives on the line.

to the floor. The room has a drop ceiling with acoustic tile, and flooring laid over sealed concrete. I was ceded half of the lower area, which only required sharing space with the furnace and water heater.

Framing for the layout included some pieces of L-girders from the old layout in the Harrow to Kingsville section. Most of the remaining sections are grid type with 24" wide lengths of $\frac{5}{8}$ " plywood on 1 x 4 pine. This is attached solidly to the wall studs with the front edge supported by 2 x 2 legs on 4-foot spacing. The plywood decking and the $\frac{1}{4}$ " birch plywood for overhead and front panel valences was ripped by the lumberyard.

The decking was covered in most areas with Homasote, which I prefer as a sound deadening agent and for accepting track spikes. The Walkerville area is supported above the underlying hidden area by vertical 1 x 2s such that there is 7" of clearance, which works well when a reach-in is required. Maintaining a 24" standard width for most areas is just right for reaching the two main lines. It's also economical when considering that plywood and Homasote come in 4 x 8-foot sheets.

Overhead light valences hide the light fixtures. Power outlets for tools in the overhead valance panel provide easy access for maintenance needs. Window blinds from a big-box department store hide all storage areas under the layout and make it easy to find anything. A wheeled workbench that holds all the heavier tools



3 A westbound through freight is highballing through Blenheim Junction, the crossing of Chesapeake & Ohio Sub 1 (Walkerville to St. Thomas) and Sub 2 (Sarnia to Erieau). The double track New York Central main passes in the background.

is stored there, and a small refrigerator is stocked with things that keep the crews happy. Marine-style refreshment holders are located on the front valences.

Track and roadbed

Roadbed for the main lines is $\frac{1}{4}$ " cork while passing sidings are thinner cork. I made a cutting guide that allowed all cork to be cut from large sheets. Ties in all yards and most industrial sidings are glued directly to the Homasote.

I used a mix of different rail and turnouts. Rail in the hidden areas and in the unmodeled portion of the furnace room is code 100 with Peco or Shinohara turnouts. All modeled areas are code 83 Micro Engineering flex for main lines and code 70 for sidings. Near the end of

track laying, I started to use Central Valley tie strips of both variants for main lines and for sidings. Most of Walkerville yard is also done with CV turnout ties.

I enjoyed doing this work as I had my bench grinder beside me and could easily make all the points and frogs to fit. I used Barge leather cement to glue the rail to the tie strip. The self-gauging feature of the tie strips and turnout ties has resulted in track that works flawlessly. Some industrial areas use code 55 rail or are hand laid directly on the Homasote. I also hand laid four crossings.

All commercial turnouts were rebuilt to be Digital Command Control friendly, including removing swivel points and replacing them with solid point sections running to the frog. All point bars are Clover House PC board tie strip. For the

most part, rail and switch feeders were soldered securely to the bottom of the rail, then fed through holes drilled as the rail was lowered into position.

Drops were originally installed for the frogs, but as I reworked switches or built new ones, I kept the frogs as short as possible. This, combined with all-wheel pickups and decoders with stay-alive capacitors, has resulted in me becoming a member of the dead frog society. Even my little 4-4-0 with tender pickups has no problem on No. 8 turnouts. That's the case for 116 switches, of which 19 are powered with Tortoise by Circuitron motors on the main lines.

Of the 19, 16 of the powered switches are controlled by Java Model Railroad Interface (jmri.org) PanelPro on the dispatcher's computer. All Caboose Industries manual switch throws in the scenicked areas have been reworked with a smaller footprint and a pushpin handle made from a round-head pin painted green and yellow.

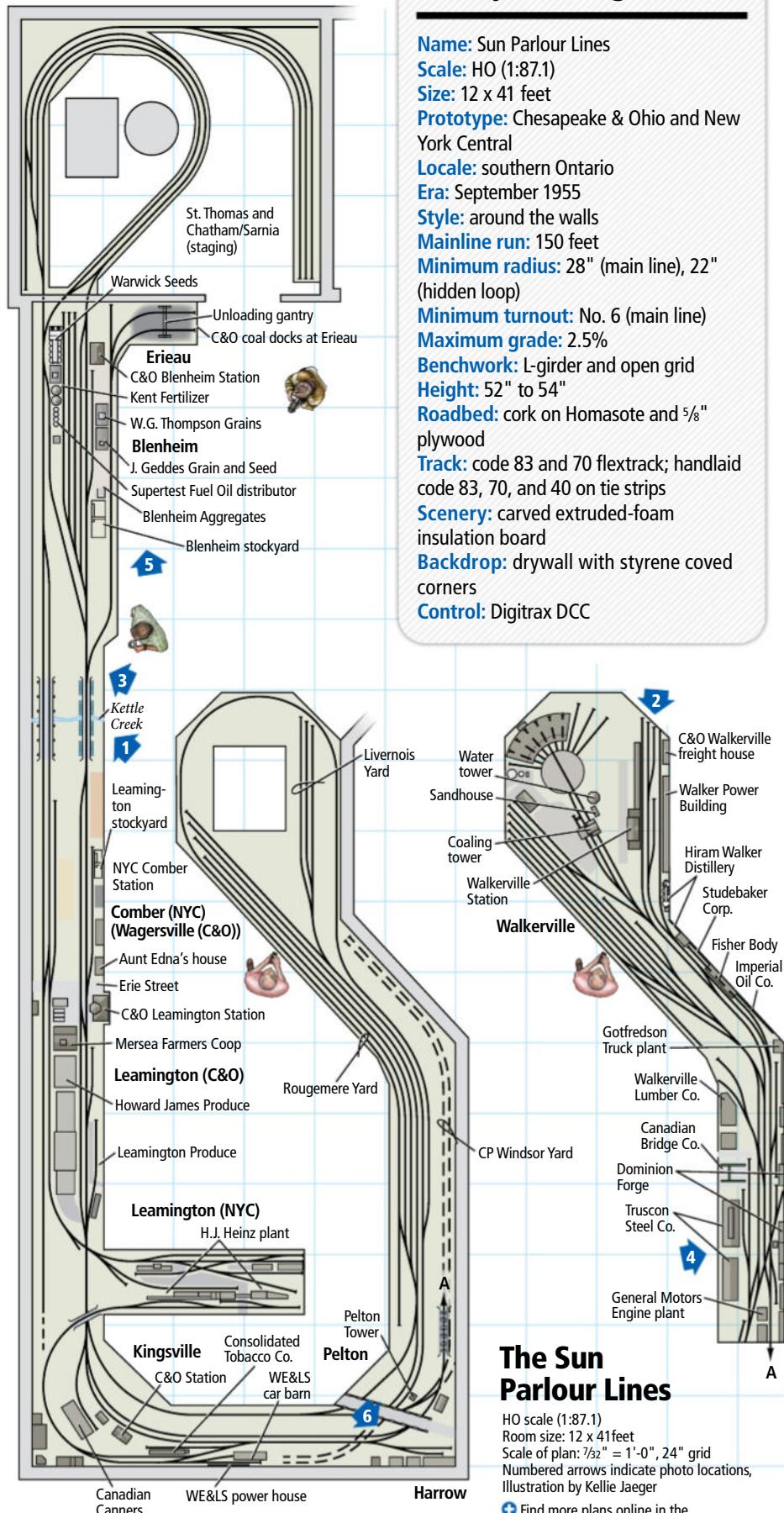
Layout control

I built the layout with Digitrax DCC. I recently upgraded to a DCS240+ command station, paired with my originally installed DB150 booster. I have updated to duplex control, where the throttles and command station communicate back and forth. A Digitrax LNWI receiver permits the use of cellphones as throttles. The Digitrax system is connected through a LocoBuffer-II to the dispatcher's computer set up with JMRI's PanelPro and DecoderPro. There's a separate programming track at this desk. An overhead Logic Rail fast clock runs at 4:1 ratio.

All wiring on the upper level at Walkerville is done on the topside with the 14AWG main track feeders and branches running every 24" at right angles to the tracks. They are buried in grooves cut in the Homasote and feed the underside of the tracks with short 22AWG feeders. Ballast and grass make them all disappear. This ensures that hands can safely reach in to the lower level staging, and the topside access permits easy maintenance.

Locomotives and rolling stock

The C&O dieselized in 1951 with GP7 units built by General Motors Diesel Ltd. in London, Ontario. The NYC continued with steam, with the last being operated on branch lines in Ontario. In the case of the Comber to Leamington branch, that would have been in May 1957. With the



The layout at a glance

Name: Sun Parlour Lines

Scale: HO (1:87.1)

Size: 12 x 41 feet

Prototype: Chesapeake & Ohio and New York Central

Locale: southern Ontario

Era: September 1955

Style: around the walls

Mainline run: 150 feet

Minimum radius: 28" (main line), 22" (hidden loop)

Minimum turnout: No. 6 (main line)

Maximum grade: 2.5%

Benchwork: L-girder and open grid

Height: 52" to 54"

Roadbed: cork on Homasote and 5/8" plywood

Track: code 83 and 70 flextrack; handlaid code 83, 70, and 40 on tie strips

Scenery: carved extruded-foam insulation board

Backdrop: drywall with styrene coved corners

Control: Digitrax DCC

The Sun Parlour Lines

HO scale (1:87.1)

Room size: 12 x 41feet

Scale of plan: 7/32" = 1'-0", 24" grid

Numbered arrows indicate photo locations, Illustration by Kellie Jaeger

Find more plans online in the Trains.com Track Plan Database.



4 Essex Terminal Ry. 104 switches Truscon Steel at Walkerville. This unit was painted by Bob's friend, Mark Roach, who lettered it with custom decals. Behind is Dominion Forge and the ETR/C&O tower.

magnetic ramp to cut off passenger power at Walkerville station.

Scenery construction

Scenery includes extruded-foam insulation board hills and carved Homasote ditches. All plaster was coated with beige latex paint to ensure no white would show through. Track weathering began with a coat of Rail Brown acrylic. Since the switches were DCC friendly and required no electrical contacts, I was very free with the weathering paint to avoid any shiny spots except the top of rail heads.

At this point building locations were marked on the layout. My crew and I ran operating sessions for a couple of years, debugging trackwork before scenery was completed. A varied mix of products from many suppliers included stone-based ballast and trees from Scenic Express. The background corners were coved with .060" styrene snapped into grooves cut in the drywall. I painted the



5 The tree line acts as a scene divider between the C&O yards at Blenheim and the branch down to Erieau that handled Appalachian coal railed to Conneaut, Ohio, and then by ship, such as the *Alexander Leslie* on the backdrop, to Erieau.

NYC Leamington branch operating right past my high school, I had ample opportunity to watch steam action in ninth and tenth grades. I have a selection of PM, C&O and NYC steam that allows us to have "all steam" operating sessions.

At any one time there are about 180 pieces of rolling stock on the layout. This is enough to provide traffic for all industries without clogging the layout. My collection of stock extends from the time

of Athearn stamped metal cars and MDC cast zamac kits to the latest from Kadee and Rapido, including many craftsman kits and scratchbuilt cars along the way. All rolling stock has metal wheels, air hoses, and uncoupling levers installed. The history of couplers extends from early Devore, to a complete conversion to Mantua loop couplers, and then eventually to Kadees. All uncoupling is done with wood picks except for one



sky light blue without clouds. The tree line backgrounds were printed from photos I took of farmland east of Blenheim.

Running trains

The modeled portion of the layout is from Windsor/Walkerville at the Detroit River to Blenheim, 80 miles to the east. Operations extend off stage west to Detroit and east to Buffalo. The NYC and the C&O operated their own separate lines from Detroit to St. Thomas. From there, east to Buffalo, the C&O had trackage rights on the NYC. This joint section is emulated on the layout by having all trains operating east of St. Thomas to return on the NYC such that both Detroit and Buffalo yards are in the lower section. This has permitted through trains to operate twice the length of the layout. For this extension to Buffalo the NYC stations have alternate names. For example, Comber becomes Hagersville and Pelton becomes Canfield Jct.

Operations in all areas follow prototype practices wherever possible. Through passenger trains operate between Detroit and Buffalo, as do through freights, which make limited stops at Comber on the NYC and Blenheim on the C&O. Local freights



6 Chesapeake & Ohio No. 5738 switches Clark Cannery, the home of a local favorite, Clark Beans. The two end buildings are scratchbuilt while the center one is a modified from a kit.

take care of all the intermediate points. The C&O locals between Walkerville and Chatham can occupy a crew for a couple of hours. Other assignments such as the Essex Terminal Ry., the C&O Erieau branch to the coal docks, the WE&LS between Kingsville and Leamington, the NYC branch that services H.J. Heinz in Leamington, and the Walkerville Industrial area switching job keep operators busy during sessions.

All of this was designed using prototype timetables, straightline graphs, Micro-Mark car cards, a prototype-looking employee timetable for operators, a dispatcher sheet to record all movements, and a green card describing the assignment that accompanies the car cards for the operator. Another sheet listing all the train movements over the day and afternoon tricks of an operating session is used by the dispatcher to keep track of assignments.

Substantially complete

It's been said that everyone needs a hobby. In my experience model railroading has been the best hobby because it develops the skills necessary to make things, to learn about various technologies, to cross over into other artistic hobbies, and most importantly to develop many friendships through social interactions such as conventions, railfanning and hosting or attending operating sessions. Seven plus decades at this and I'm still learning.

I deemed the layout to be substantially complete in 2016. Most of the work, except for a couple of early sessions with rail friends and some custom painted diesels, was done by me. This layout has made a great retirement

project. The to-do list ensured I was always busy and never could complain that I had nothing to do.

A Varney 4-6-0 was the first engine on the version of the Pine Tree Central [MR's first project railroad, in the December 1952 issue. — Ed.] that my father and I built. I've come full circle as that first Varney engine is now being updated as my current project. A new motor, many brass details, and a sound decoder are being added to transform it into a Canadian National Ten-Wheeler. Almost all the NYC and C&O trackage has disappeared today, but their memory remains on the Sun Parlour Lines. **MR**



Meet Robert D. Sanford

Bob, who started this hobby as a boy of 4 sitting on the base of a lamppost watching trains cross the main street in his hometown in Ontario, has now brought his retirement layout to the point he calls substantially complete. A graduate mechanical engineer, Bob spent a career with General Motors in Canada. With wife, Patricia, they had two fine boys, one of whom died in 2018. Rail history and family genealogy are important to him.

Detail and weather a GONDOLA



Mont Switzer shares how he upgraded an InterMountain HO scale drop-bottom gondola with detail parts, decals, and weathering. Then learn how he made three loads for the car, including the pipe load shown above.

Plus learn how to model three loads for this drop-bottom HO scale car

By **Mont Switzer** • Photos by the author

When InterMountain Railway Co. released its HO scale drop-bottom gondola decorated for Milwaukee Road, I was drawn to the model because it was a good fit for cars loaded with southern Indiana cut limestone and coal that the railroad interchanged with the Monon RR at Bedford, Ind. Though the Monon rostered its fair share of home-road gondolas, "The Hoosier Line" historically had to make use of off-line cars during the peak season for shipping limestone blocks. The blocks were shipped north for use as breakwater on the shores of Lake Michigan near Michigan City, Ind.

Each summer, every Monon RR terminal was directed to send "all gondolas, regardless of ownership or condition" to

McDowell Yard, Bloomington, Ind., for breakwater loading in the southern Indiana stone district. During the summer you could see gondolas from just about any railroad on the Monon.

To learn more about the full-size cars, I consulted Doug Nighswonger's *The Milwaukee Road Color Guide, Volume 2* (Morning Sun Books). The InterMountain car represents a series of 200 cars built in 1949. The gondolas, classified GS by the Association of American Railroads, had fixed steel ends and sides with steel drop-bottom floor panels. Hinges located along the center sill of the car allowed bulk commodities such as coal and limestone to fall outside the rails when the drop-bottom panels were opened.

The Milwaukee Road terminal in Latta, Ind., was located in the heart of the Indiana Stone District and near southern Indiana coal deposits. Latta was about as far south as the railroad went in 1958, my modeling era, so a few of these cars were in order for my HO scale model railroad.

Follow along as I share my techniques for detailing, decaling, and weathering the gondola. Then learn about the three removable loads I made for the car.

Mont Switzer, a longtime contributor to Model Railroader magazine, lives in Middletown, Ind. His article "How to detail and paint a semi-trailer" appeared in the September 2024 issue.

MODEL UPGRADES



The ready-to-run InterMountain model I purchased is decorated as Milwaukee Road No. 93150 in its 1949 as-delivered appearance. However, when I examined the model more closely, I noticed the air reservoir for the AB brake system was missing. However, the brackets were there.

Fortunately, I had a Cal Scale air reservoir (No. 283) on hand, but it was slightly oversized for the car's brackets. The solution? Shave off the L-shaped mounting bracket from the crossmember, turn it around, and re-attach it with cyanoacrylate adhesive (CA). This extended the distance between the two brackets just enough to accept the Cal-Scale reservoir. If you need more room, trim down the mounting lugs on the reservoir ends. Then I attached the air reservoir with gap-filling CA ①.

Shifting my attention to the car ends, I noticed the bottom-release uncoupling levers were missing. Curiously, the brackets required for modeling them are attached to the ends. I threaded Tangent Scale Models formed wire uncoupling levers (No. 204) into the brackets.

Then I attached .100" long bits of Evergreen Scale Models .100" half round (No. 243) to the bottom of the draft-gear box covers. This served as the termination point for the uncoupling levers. To ensure a strong glue joint, I scraped the paint off the covers at the attachment point.

Next, I drilled the end of the half-round pieces with a No. 75 bit in a pin vise. This assembly will hold the levers firmly in place without any cement, making them easy to remove should you need to service the couplers ②.

PAINTING AND WEATHERING



After removing the trucks and couplers, I brush-painted the new details to match the rest of the car. The color doesn't have to be a perfect match as the weathering will even things up. While I was at it, I brush-painted the air hoses flat black and the glad hands a rust color.

To give the impression portions of the car sides had been repainted and restenciled, I masked them before adding subsequent weathering. First, I scraped off the BLT 5-49 stencil under the dimensional data. Then I masked off the load limit and light weight numbers above. On the panel next to the ladder, I masked off an 18 x 18 inch section for the journal repack data ① and ②.

Next, I used an airbrush to spray the underside of the gondola with a light coat of flat grimy black. Coverage doesn't have to be complete — there just needs to be enough color to represent coal dust. Then I flipped the car over and gave it the same treatment.

I gave the car sides and ends a wash of black acrylic artist paint thinned with Windex. I used an inverted single-serving plastic food container as a palette. Then I dipped the paintbrush into a puddle of Windex and dabbed it into the black paint, creating a thin wash ②.

I applied the wash to the car sides and ends, one panel at a time, moving the brush from top to bottom. If the effect is

PAINTING AND WEATHERING (Cont'd)

too light, repeat the process. If you feel it's too heavy, rework it with a second brush loaded with Windex only.

The wash wicked around and highlighted the various details, such as the rivets and exterior posts, without affecting the previously applied air-brush weathering. Prototype images show that the dark color accumulated more toward the lower portion of the car ③.



DECALS, POWDERS, AND LEFTOVERS



With the black wash satisfactorily applied, I removed the bits of masking tape from the sides of the car, exposing the light weight and load limit lettering. The numbers should look clean compared to the data that wasn't masked.

Next, I went to my scrap decal box to find decals for the areas I'd previously masked off. I applied LAT 2-57 in the panel to the right of the capacity, load limit, and light weight data. This indicates the car was reweighed by the Milwaukee Road at Latta, Ind., in February 1957. The journal repack data (left of the ladder) was in the remnants of another decal set.

The reweigh decal started life as a Monon stencil (LAF 2-57); I just changed the F to a T. If you don't have Milwaukee Road reweigh dates [available from Illinois Central Gulf Decals. — *Ed.*], try to use something that makes sense for where the car operated and would have been reweighed.

Before applying the decals, I first placed a small amount of Future floor polish on the areas that I'd previously masked. [Future is no longer available. — *Ed.*] Then I set the decals into place. The polish dried to a glossy finish in about 30 minutes, drawing the decals into the model ①.

With all of the decals in place, I airbrushed the entire model with Testor's Dullcote. The clear coat left a flat finish and protected the weathering and decals applied to this



point. It also prepared the model for the final weathering step — Bragdon Enterprises weathering powders.

I used medium rust powder on the Milwaukee Road gondola. I applied it lightly to the side panels, turning all but the newly applied decal lettering slightly rusty. I also randomly coated the car interior with the rust powder. The weathering powder became permanent a few days after application.

Even gondolas billed as empty are never really empty. Wood dunnage and metal scraps tend to accumulate in gondolas, indicative of previous loads handled. I placed some 4 x 4 wood blocking in the car to represent what was likely left over from loading large blocks of limestone breakwater.

I also added some coal in the corners of the floor to represent a few chunks that didn't drop out when the doors were opened. I placed the details so they wouldn't interfere with removable loads for the car ②.

FINISHING TOUCHES

Similar to most of today's ready-to-run models, the truck sideframes on the gondola are molded in slippery engineering plastic. Though the material makes the cars free rolling, the plastic doesn't take and hold paint and weathering well. However, I developed a workaround for this.

First, I removed the trucks and took out the wheelsets. Next, I placed small bits of tape over the wheel sockets. Then I media blasted the sideframes. This leaves them a pleasing gray black color, just rough enough to hold paint and any desired weathering.

I replaced the stock wheelsets with Reboxx .088" semi-scale wheelsets (No. WS2-1000). I painted the wheel faces and backs grimy black. I kept the paint off the treads and axle tips.

After I took the image at right, I painted the brake shoes with rust color paint. I then applied light rust weathering powders around the spring pack. I applied just enough powder to capture the effect of rust generated by the spring pack flexing under load. I darkened the areas around the journal boxes with black powders to represent oil seepage.



Three removable GONDOLA LOADS

I like to use removable loads on my open-top cars. I also prefer that the loads be representative of what the car actually hauled on the portion of the railroad that I model. Three easy-to-model loads that are a good fit for this and most

Milwaukee Road gondolas operating in southern Indiana are limestone (Lake Michigan breakwater), coal, and pipe. Here's how I made the loads for my InterMountain HO scale drop-bottom gondola.

BREAKWATER FOR LAKE MICHIGAN



Breakwater is basically blocks of limestone that aren't suitable for milling into architectural components and are therefore considered scrap. The quarries in the Stone District of southern Indiana are full of these rejected blocks. Although the blocks aren't consistent in size, 4 x 4 x 8 feet is typical.

Three to five blocks per car was typical.

I made a flexible mold for these blocks using .010" styrene. After assembling the styrene with solvent cement and letting it dry, I filled the mold with Amaco Sculptamold, a papier-maché product often used in scenery.



Taking advantage of the flexibility of the .010" styrene mold box, I popped the blocks out before they were completely dry. Then I used a dental pick to add drilling scars on the sides and ends of the blocks, as you can see in the photo at right.

The full-size limestone blocks weren't pure white due to iron deposits in southern Indiana. Over time the blocks also darkened from mold. To replicate these effects, I applied a light coating of Bragdon Enterprises rust and black weathering powders.



Making coal loads is nothing new to the hobby and has been covered in these pages many times. However, since I was building more than one load for the same car, I wanted to hurry things along a bit. I used CM Loads item No. 3129, a resin casting designed for the Walthers 100-ton quad hopper. You can substitute similar commercial loads from other manufacturers for this project.

First, I sawed the load to achieve the proper length, as shown at left. Then I sanded the edges with 80-grit paper to get the correct width.



The coal load needed to be heaped in the middle. I added .060" styrene shims to the bottom of the load until the correct height was achieved. Both ends of my load were shimmed a total of .180", or three strips of styrene; the amount of shimming will vary depending on the car and load you use.

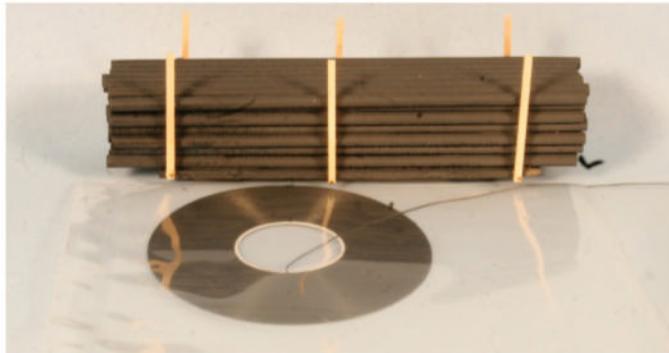
Finally, I wrote the car number(s) the load will fit in on the bottom of the casting with a silver permanent marker. This speeds up locating the proper load when cars are being prepared for an operating session.

PIPES FROM STIR STRAWS



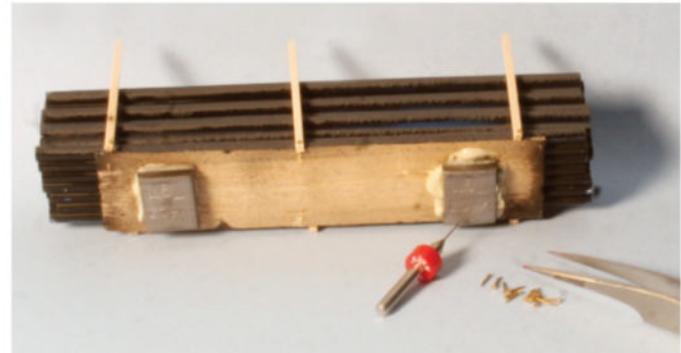
The last load I made was pipes fashioned from small plastic stir straws that I had on hand, well, for a while. I acquired the straws from an Auto Train car attendant in 1974 when my wife and I were riding the train between Louisville, Ky., and Sanford, Fla.

The straws represent 12" inside-diameter steel pipe approximately 37 scale feet long. I made a false floor for the load from a piece of $1/8$ "-thick sheet balsa, cut shorter than the length of the pipe, and set it in the gondola.



Then I loaded the straws one at a time, securing them to each other and the false floor with flexible craft cement. Once the glue had dried, I pulled the load out and spray-painted it Rust-Oleum Painter's Touch 2X Semi-Gloss Black.

The prototype relied on the car sides and steel bands to keep the 4 x 4 posts vertical so pipe could be stacked beyond the height of the car sides. I pinned and glued six basswood 4 x 4 vertical posts to the false floor, three per side. I used Chartpak black matte $1/64$ " tape to re-create the bands.



Since the plastic pipe load added little weight to the model, I placed two $1/2$ ounce A-Line self-adhesive lead weights on the bottom of the balsa floor, as shown in the photo at right. The weights raised the load about $1/4$ ", which was OK. The load slips in and out of the car easily and also fits several other gondolas in my fleet that transport pipes.

Though I built these three loads for the InterMountain HO scale drop-bottom gondola, they can easily be adapted for gondolas from other manufacturers. **MR**

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The world of L gauge railroading



L gauge can offer modelers a different approach to building layouts and models. The Canadian National U-1-f Mountain was built from scratch by Calvin Bramble and his friend Doug F. This Lego layout features brick-built track using custom rail.

There's a lot of versatility in those little plastic bricks

By Isaac B. Levi • Photos courtesy of the Brick Train Awards except where noted

One of the greatest strengths of model railroading is its diversity. History, woodworking, electrical engineering, and so many other things can all be performed for the common goal of making a miniature railroad that looks and operates as close to the real thing as possible. And yet, for nearly every task the model railroader must accomplish in the pursuit of his or her hobby, it's nearly guaranteed that there's one or more alternative ways to do it too. For L gauge modelers, this idea of taking an alternate route

to the same destination is perhaps the central feature of the scale.

But what is L gauge, and why should modelers of other scales take any interest in it? First, the "L" in L gauge stands for Lego, as most trains in this scale are built with bricks from this popular construction-hobby brand and designed to run on the Lego-standard track gauge of 1.48". Of course, the question that comes to mind is, "How can this be anything but a children's toy?"

It is true that L gauge (also known as L scale) doesn't exist among the scales of

the National Model Railroad Association (NMRA) nor the Normal European Modelling (NEM) Standards. Likewise, as shown above, the work required for an L gauge model railroad is of a completely different nature than the work that must be put into, say, an HO scale layout. In L gauge, although the Lego parts are commercial components, there are very few sources for complete model trains. And most of what is available might be better regarded as toy trains.

As such, nearly all of the work of the L scale modeler is just like scratch-

building; discovering a way to use various shapes, sizes, and colors of building bricks to create a realistic model of a given structure, locomotive, or car. This harkens back to an earlier age of model railroading, where kitbashing and scratchbuilding were the best means (and in some scales, still the best) of achieving a prototypical model railroad.

Further, discovering the right combination of bricks to achieve a particular effect in L scale can sometimes be a challenge to rival anything other scales have to offer — especially the intricate mechanisms of steam locomotives. The results can be measured against the best scale model trains available, as demonstrated by the work of L scale builders like Glenn Holland, Tony Sava, and Carl Greatrix. This fact has been recognized by the NMRA, which has given awards to several of its members for their L gauge modeling achievements.

On these grounds, it appears as though there is good reason to consider L gauge modelers as model railroaders in the fullest sense of the word.

The advantages of L scale

In all respects, the principal advantage of L scale over other, more traditional scales is its modularity. That is to say, once a model is built, its configuration isn't fixed. Whether scratchbuilt or made from a kit, the model can be reworked and improved at any time. New details can be added, proportions changed, and drivetrains can be modified. This same attribute also means that a model can be built in stages, with multiple rounds of revision to ensure that the resulting model is as realistic and functional as possible. To do the same in conventional model railroading is more difficult, and often results in cast off, unusable earlier attempts.

A second advantage of L gauge modeling is the space requirement. Despite the fact that L gauge is a relatively large scale, somewhere between the conventional Gauge 1 and O gauge, the standard curve produced by Lego has just a 12.5" radius. This is called R40 by L scale modelers because 12.5" equals the spacing of 40 Lego studs. Because the large trains can negotiate this tight radius curve, a compact Lego layout could require only a little more space than a small N scale layout, making it ideal for modelers who want a larger scale but don't have much room.

The third advantage of L scale comes in the form of introducing a



Standard sections of Lego track come in both straight sections and 12.5" radius curves. Some custom sizes are available from hobbyists as well. Isaac B. Levi photo



Maine Central 470, a 4-6-2 Pacific built by Alco in 1924, was the subject for Glenn Holland's L scale scratchbuilding project. The herald and road numbers are decals.



This view of a partially constructed steam locomotive tender shows how the power and control module fits inside. Isaac B. Levi photo



Nickel Plate Road GP30 No. 900 not only survived into preservation in Bellevue, Ohio, it was also the subject of this L scale model built by Nick Dombi.



Isaac B. Levi's brick rendition of Cotton Belt 2-6-0 No. 412, a 1915 Baldwin product, is shown here lettered for his freelance Ozark Mountain RR. Isaac B. Levi photo



Despite being built of LEGO bricks, Glenn Holland's 2-8-2 locomotive and rolling stock capture the feel of scale railroad models.

new generation to the hobby. LEGO bricks are popular with both children and adults. However, many of them are unaware of the existence of L scale model trains. From my experience, kids respond positively to the sight of an L gauge railroad, and even more positively to the opportunity to help operate it. LEGO trains can be a great way for them to experience model railroading for the first time, while at the same time using building materials they are familiar with.

Easy to operate

LEGO's power and control systems use both battery power and remote control. This eliminates the need for extensive wiring, as well as cleaning wheelsets and track, and allows more opportunity to spend time running trains.

One should note, however, that although command-control power solutions are standard for L gauge, unless the modeler has some technical skill and is willing to use third-party parts, these systems lack the full functionality of a true Digital Command Control (DCC) system. The number of trains that may be operated simultaneously with stock LEGO control components is just eight. Though that's comparable to a Bachmann E-Z Command DCC set, for large layouts and big operating sessions, this may pose a problem. For smaller model railroads, however, the stock power solutions from LEGO are sufficient.

For those who need to run more trains at once and don't want a highly technical or battery-powered solution, it is possible to wire an L scale layout for DC block control using the older LEGO 9V system that the firm produced in the 1990s and early 2000s. That system is being revived by third-party company Fx Bricks, so using it might be easier than you think.

Other factors to consider

In terms of price, an L scale layout can be built at costs comparable to that of O gauge conventional equipment. For some items, L scale is less expensive; for others, O gauge has the lower price. The end result is that generally the cost gains cancel each other out, with L gauge having the potential to be less expensive if O gauge scenery components are used along with L scale's smaller footprint when building a layout.

Perhaps the most apparent sticking point for modelers is the higher degree of detail in conventional models as opposed

to what can be done with brick-built trains. The rivet counter will certainly be dissatisfied with the deep flanges, undersized or over-sized wheels, and comparatively coarse building grid of the Lego construction system. In contrast, the more operation-minded modeler will appreciate the general durability of brick-built trains, and the ease with which they can be repaired if the models are damaged.

Figures are another consideration. Lego minifigures and the figures produced by other brick brands are out of scale to human proportions. However, unlike many O scale figures, they are poseable and can be built in a seemingly infinite number of clothing and facial expression configurations.

Perhaps the biggest challenge for the L scale modeler is the lack of commercially available equipment. Although Lego and some off brands do produce train sets, most can accurately be called toy trains instead of model railroad equipment. A few fans offer building instructions for models that save design work, but these still require the builder to order the requisite parts on his or her own. As such, L gauge is currently best suited for hobbyists who, like myself, enjoy the challenge of making their own train models.

L scale adventure

As we've explored, L scale is a collection of options and opportunities. Many of the features of Lego trains make them ideal for modelers on both ends of the age spectrum: the very young and the retiree. The small radius curves make L scale ideal for building a model railroad in a bedroom, a closet, an apartment, or even incorporating it into a piece of furniture. An L gauge switching layout in any of these spaces would make for hours of modeling and operating fun, and it could be an ideal layout for the college student as well.

For the aging modeler specifically, the size of L scale is an additional advantage. There's no tiny lettering that you can only read with a magnifying glass, the trains are exceptionally easy to place on the rails, and repairs are generally simple. As a plus, children and grandchildren can safely help with setup and operation of the layout.

From my perspective, the world of L scale and brick-built trains offers a lot for the creative modeler, the tinkerer, and those who want to work in a larger scale but have limited space. So if you want to



HOLGER MATTHES

Holger Matthes' *The Lego Trains Book* is a great resource for modelers interested in L scale.

Learning more about L scale

The work of other modelers can be a great inspiration, and I encourage those who are comfortable with navigating the digital world to investigate the following websites for more information about L scale trains:

- Brick Train Awards: <https://www.bricktrainawards.com/>
- Brick Model Railroader: <https://brickmodelrailroader.com/>
- L-Gauge.org: <https://l-gauge.org>

For who prefer print resources, *The Lego Trains Book* by Holger Matthes (No Starch Press, 2017) is an excellent resource. Though it's centered around modeling European prototypes and was published before the latest Lego Powered UP control system was released, it serves as a good starting point for those interested in learning more about L scale.

For more on Lego train basics, check out the video series hosted by *Classic Toy Trains* editor Rene Schweitzer on Trains.com. — I.B.L.

branch out and work in a scale with a different modeling experience from any other, give L scale a try. You'll soon see that those little plastic bricks can be so much more than just a toy. **MR**

Isaac B. Levi is a long-time hobbyist and Lego train advocate. This is his first byline in Model Railroader magazine.

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Build a small stone arch culvert

Pittsburgh Railways Co. Presidents Conference Committee car 1790 rumbles over a stone arch culvert on an HO scale diorama built by Howard Andrews. He shares his multi-step process for scratchbuilding the culvert.

Learn how to make clay masters, build a mold box, and more with this project

By Howard Andrews • Photos by the author

When building my HO scale trolley modules, I decided to add a small creek to one of the scenes. This called for some type of support for the roadway that spanned the

water feature. Since the area depicts an upscale urban setting, I wanted something appropriate for the scene. My modules are set during the 1950s, so a stone arch culvert

seemed well-suited for the era and locale.

Instead of looking for an off-the-shelf solution, I decided to make my own culvert. Why? Because I had all

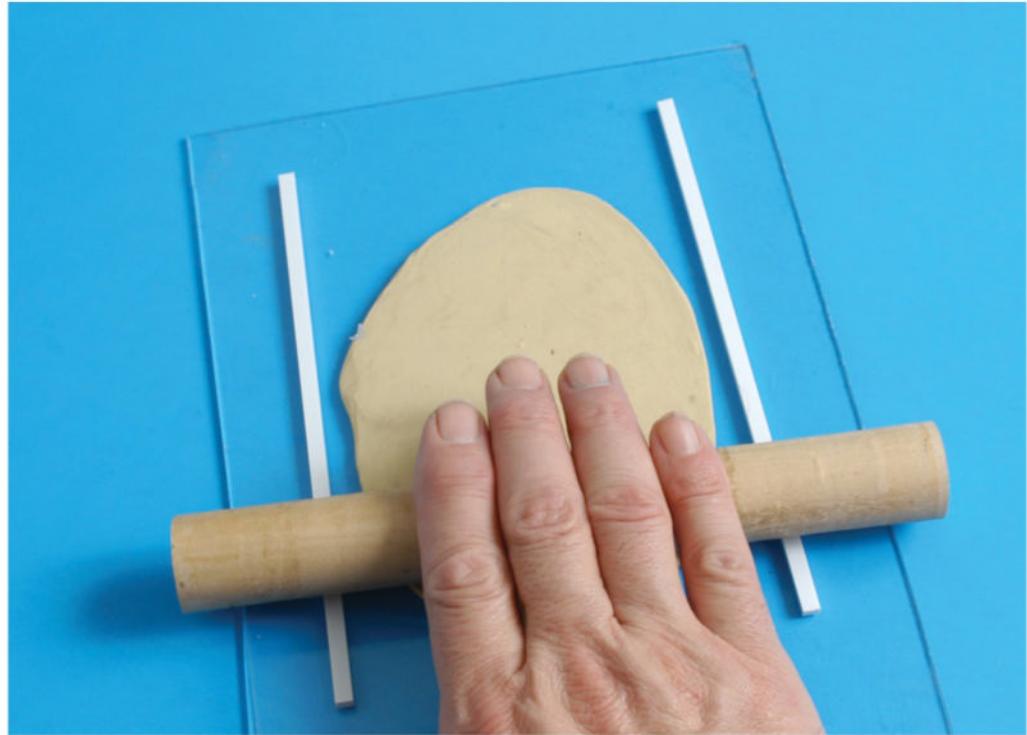
of the necessary materials on hand. Producing the masters from which the mold was made was actually very simple, requiring some modeling clay and a few basic tools. I



don't consider myself to be artistic — if I can do it, you can, too.

I sourced the mold making supplies from a local art supply store. If you've never tried mold making before, a project like this is a good starting point.

The stone arch culvert also let me try some painting and weathering techniques you don't often see in the hobby press, including gesso, dry tempera, and artist acrylics.



1 Rolling it out. Howard placed modeling clay on a piece of acrylic and rolled with to a uniform thickness with a wood dowel. He used styrene strips as guides for the dowel.



2 From cardboard to clay. With the clay rolled out, Howard set a cardboard template for the spandrel wall on top. Then he used a utility knife to cut the clay blank to shape.

Adding a culvert was the perfect solution for this creek scene on my diorama. I hope you can put some or all of the techniques outlined here to use in your future modeling projects.

Working in clay

The first step in making the master was to prepare a slab of modeling clay from

which I could cut the spandrel wall, capstones, and parapet. Working on a piece of plastic, I used a wood dowel to roll the clay to a uniform thickness, using styrene strips as a guide ①.

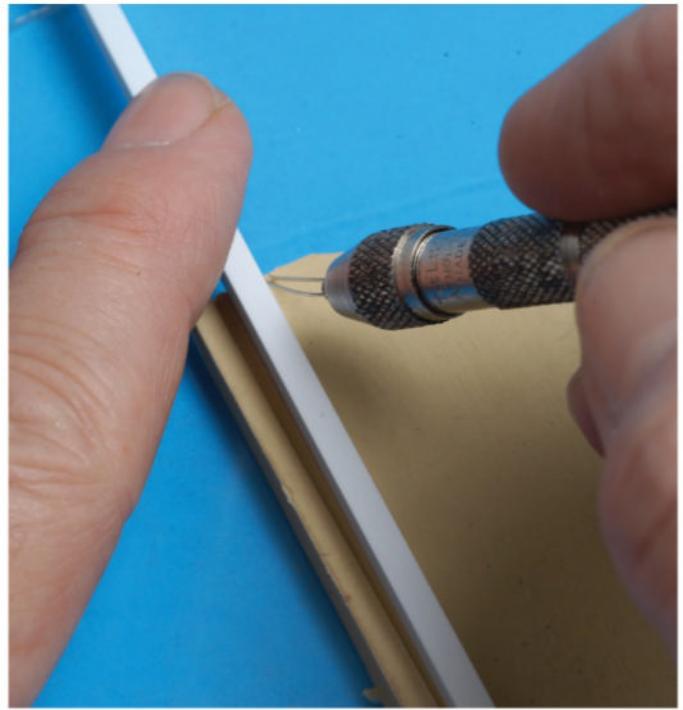
With the clay rolled out, I used a utility knife and cardboard patterns to cut out the blanks for the walls ②. The patterns were made to fit the final location on the module.

To add the mortar lines in the clay, I made my own wire tool using a short length of nickel-silver wire (a cutoff from the overhead wire for the trolleys) and a pin vise, as seen on the next page ③.

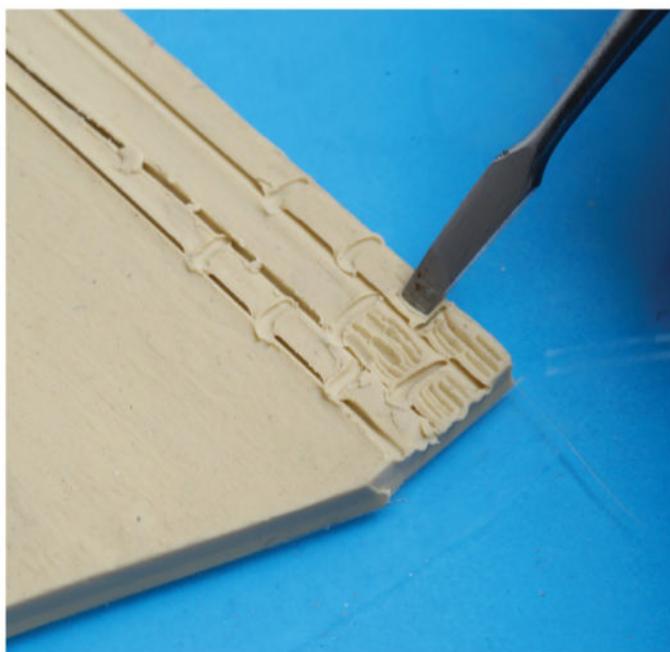
I used a piece of styrene strip as a guide when cutting in the mortar lines ④. My homemade wire tool did a nice job of removing the clay and yielding clean lines.



3 Homemade solution. A pin vise and a short length of nickel silver wire were all Howard needed to make a carving tool. The wire is a cutoff from the overhead for the trolley.



4 Line it up. Howard then used his homemade carving tool to cut mortar lines in the clay. A length of styrene strip made a handy guide to keep the rows straight.



5 Adding character. To give the stone faces realistic texture, he poked the center of each one with a small dental chisel. Some clean-up work on the mortar lines was necessary with the wire tool afterwards.

Finally, I used a small dental chisel to add texture to the stones, as you can see in 5.

Making more than one

With the masters for the spandrel wall, capstones, and parapet finished, I was ready

to make the mold. I placed all three parts on a piece of wood. Then I attached styrene strips around the clay parts to contain the silicone rubber 6. The finished mold, which I made using Smooth-On OOMOO 30 (smooth-on.com/products/



6 Building the box. With the clay masters finished, Howard placed the (left to right) capstones, spandrel wall, and parapet on a piece of wood. The styrene strips formed a wall to contain the silicone rubber used for the mold.

oomoo-30/) can be seen in 7 on the opposite page.

To cast the culvert pieces I used Synair Corp. products, which I found at a local art supply store. First I coated the mold with the company's spray-on mold release. Then I carefully filled the mold with its Por-A-Kast Mark II resin 8.

The resin set quickly and I was able to remove the parts

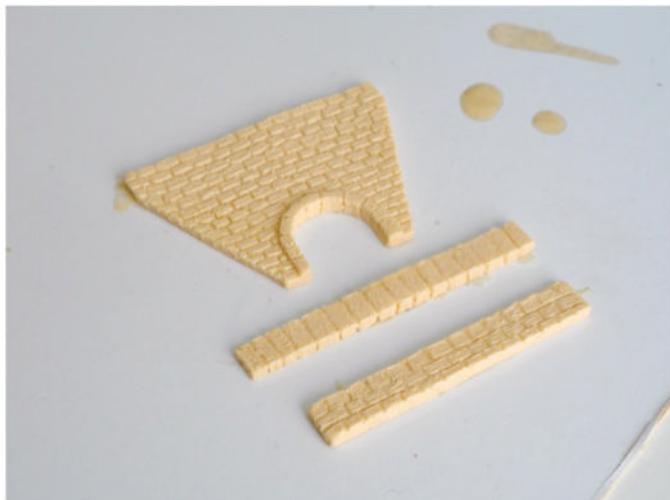
from the mold after a few minutes 9. I used epoxy to assemble the spandrel wall, capstones, and parapet.

Painting and weathering

Once the epoxy had cured, I primed the stone arch culvert with artists' gesso so it could be colored using techniques suggested by Bragdon Enterprises on its website



7 Ready to use. Here's what the finished one-piece mold looks like. Howard used Smooth-On OOMOO 30 silicone mold rubber for this project. The product is designed for basic molds like this.



9 From the mold. Here's what the culvert components look like after they've been pulled from the mold. Howard reports that the resin sets quickly and the parts can be removed from the mold after a few minutes.

(bragdonent.com) **10.** Next, I worked dry black tempera into the crevices on the culvert with a stiff brush. I then sprayed the casting with wet water (water with a few drops of dish soap added) and wiped the excess from the surface **11**. I set the culvert aside to dry.

Since the scenery on the diorama is foam based, I was able to carve an opening for the stone arch culvert. I glued the castings in place with foam-safe construction adhesive and filled in any gaps with spackling. I used artists'

acrylics to build up the color on the stones.

With the culvert in place, Pittsburgh Railways Co. Presidents Conference Committee car 1790 can safely cross over the creek to get people to work. **MR**

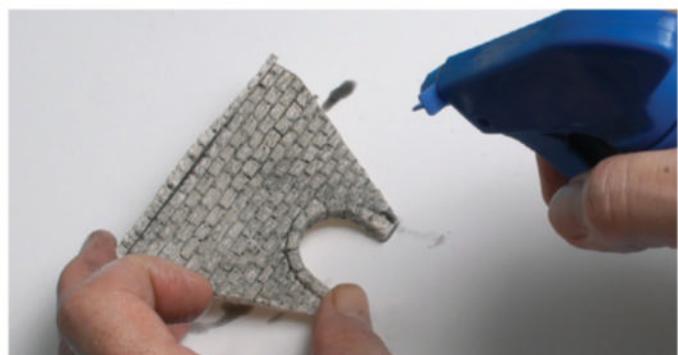
Howard Andrews lives in Canton, Mich. His interest in model railroading began early in life with a Lionel train set he received on his first Christmas. Howard's article "Scratchbuild a city centerpiece" was published in the May 2006 Model Railroader.



8 Making multiples. Howard used Synair Corp. products, purchased at a local art supply store, to cast the parts for the culvert. The company's mold release is in the aerosol can; its two-part resin is in the plastic jugs.



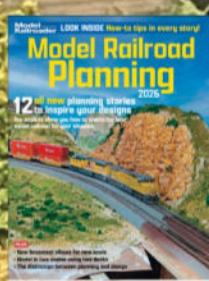
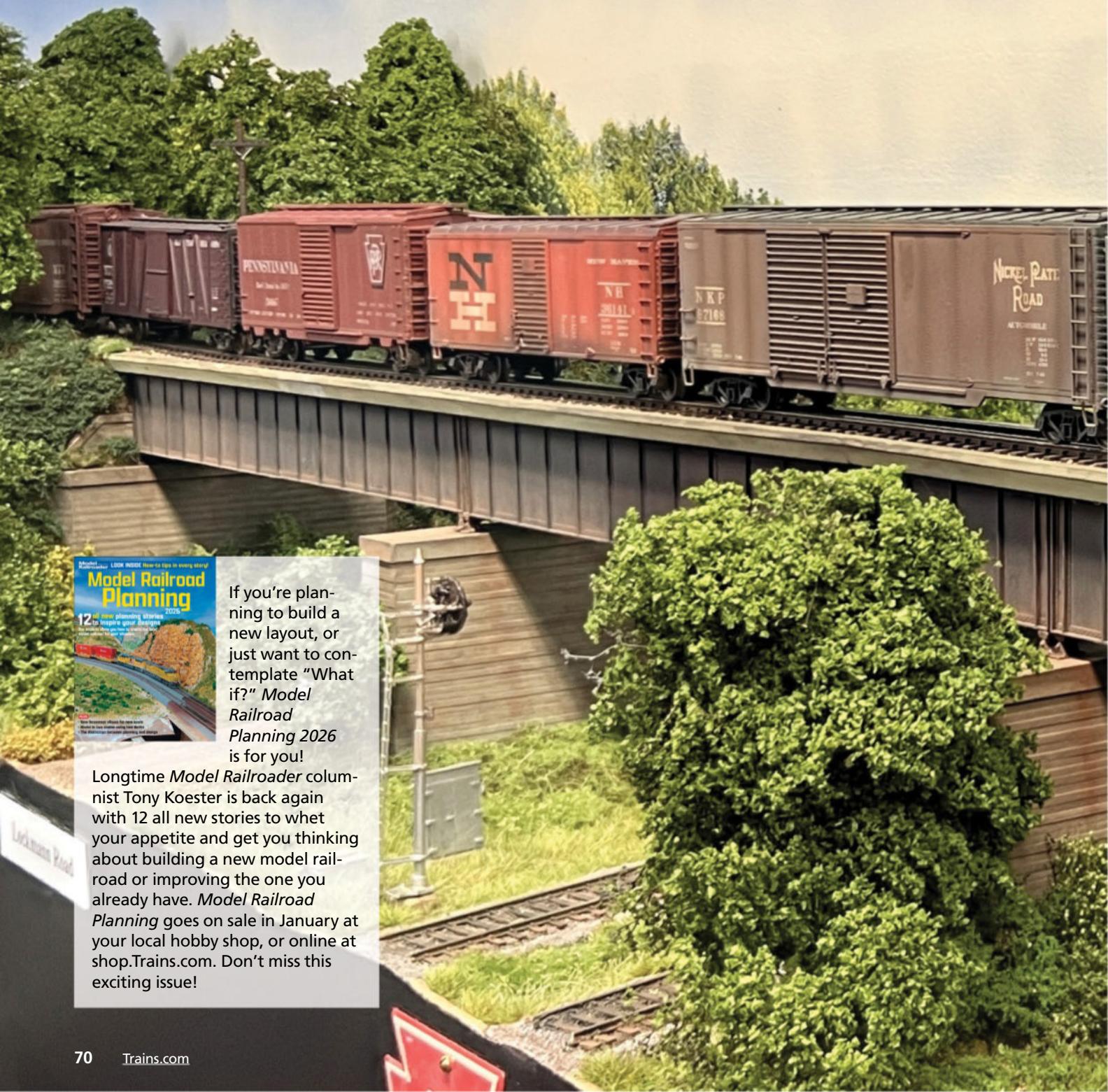
10 Home stretch. After assembling the culvert with epoxy, Howard used a chip brush to coat the stone arch structure with artists' gesso. This set the stage for subsequent painting and weathering.



11 Weathering the recesses. Once the gesso dried, Howard applied dry black tempera with a stiff brush. Then he sprayed the casting with wet water (water with a few drops of dish soap added) and wiped the excess from the surface.

Trackside Photos

It's a humid afternoon as the McKinley Yard & Road Job crosses over Lockmann Road; the Pennsylvania RR's line between Terre Haute, Ind., and St. Louis; and Longhi Creek at the Pennsylvania-Illinois Terminal interchange (PAIT) on its way on its way south on Steve Goaring's HO O'Fallon Branch. Steve Goaring photo



If you're planning to build a new layout, or just want to contemplate "What if?" *Model Railroad Planning* 2026 is for you!

Longtime *Model Railroader* columnist Tony Koester is back again with 12 all new stories to whet your appetite and get you thinking about building a new model railroad or improving the one you already have. *Model Railroad Planning* goes on sale in January at your local hobby shop, or online at shop.Trains.com. Don't miss this exciting issue!

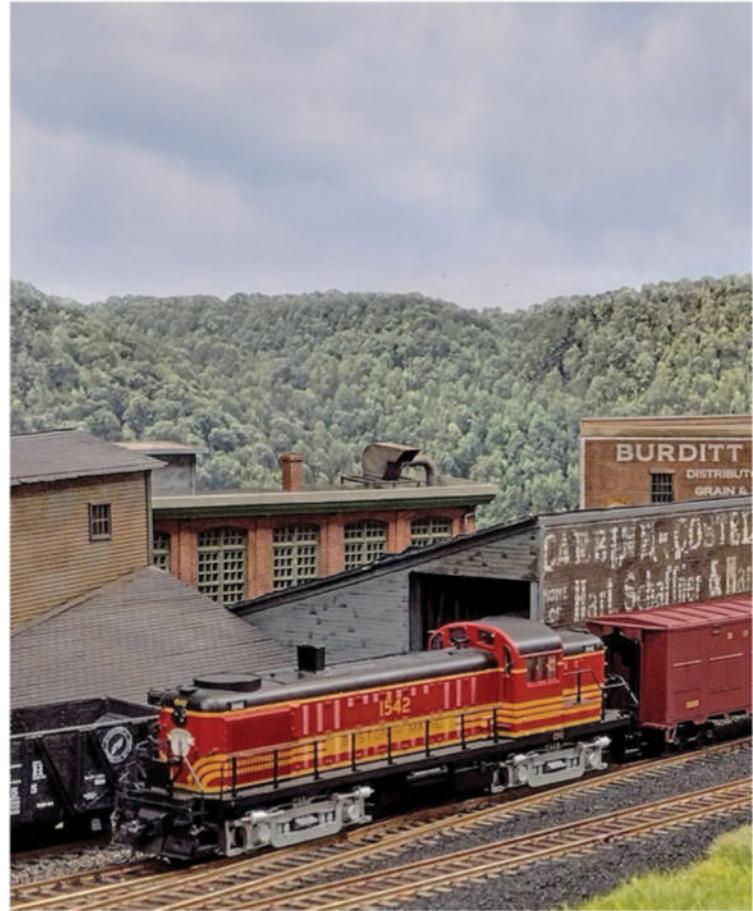




At the very end of the Slate Fork Branch, Louisville & Nashville GP9 No. 508 pulls loads from the truck-dump tipple at Flanary, Va., on Paul Schmidt's N scale Southern Ry. Slate Fork Branch. Typically, a road-wearied L&N RS3 works this job. Paul Schmidt photo

Send us your photos

Trackside Photos is a showcase for the work of *Model Railroader* readers. Send your photos (digital images 5 megapixels or larger) on a flash drive to: *Model Railroader*, Trackside Photos, 18650 W. Corporate Dr., Suite 103, Brookfield, WI 53045; or email them to us at editor@modelrailroader.com.





Blackwater Junction is a small Louisiana town on the edge of the southern cypress forests. The few passengers for the Blackwater, Gulf & Southern Ry. are transported in this side-door caboose. The On30 Mosquito Creek Lumber Co. is one of two layouts built by Joseph Kreiss. On the upper deck is the HO scale Big Island Rail/ Kawaihae Harbor RR. Joseph Kreiss photo



Today's Green Mountain Flyer, which runs between Boston and Rutland, sports an all-Boston & Maine consist behind a B&M RS3 as it makes a reverse move back to the Rutland passenger station on Gregory Wiggins' HO scale Rutland Bellows Falls Division. Gregory Wiggins photo

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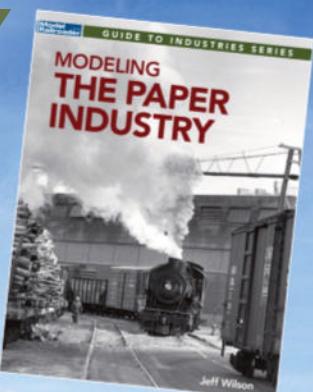
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Schedule of Events

FL, BROOKSVILLE: Regal Railways presents Toy Trains & Hobby Show. Hernando Fairgrounds, 6436 Broad St., Brooksville, FL 34601. Saturday, January 17, 2026. 9:00am-2:00pm. Admission: \$6.00 adults, children under 12 free. Vendors and model train layout. Lunch available. Contact: Joe at 727-244-1341 or visit: www.regalrailways.com for more information.

FL, COCOA BEACH: Prototype Rails 2026 Meet. January 8-10, 2026. Cocoa Beach Hilton Oceanfront, 1550 N. Atlantic Ave. (Highway A1A), Cocoa Beach, FL. Clinics, vendors, models on display, modular layouts. Registration \$55 if postmarked by 12/22/2025, \$60 thereafter. Send check (payable to "Prototype Rails") to: Tom Meyer, 2321 Kumquat Dr., Edgewater, FL 32141. Info: <https://www.prototyperails.com>

FL, VENICE: RealRail Model Train Show. February 21st & 22nd, 2026. Saturday 10-4 & Sunday 10-3. Venice Community Center, 326 S. Nokomis Ave. Layouts, displays, 100+ dealer tables. Adult admission \$13, 13 and under free w/paid adult. Tables \$55. Info at www.realarail.org. Contact: Allen Novak, alnovak@tampabay.rr.com, 941-962-8542.

IA, MONTICELLO: 2026 Train Show. 2 Days, January 31-February 1, 2026. Saturday 10am-4pm and Sunday 9am-2pm. Berndes Center, Jones County Fairgrounds, 766 N. Maple St., Monticello, IA 52310. Tables \$30. Admission: \$5; children under 12 free with paid adult. Monticello RR Club, PO Box 169, Monticello IA 52310 or email Ron Ackermann at rack611@gmail.com

NJ, TOMS RIVER: ECTP and Collectibles LLC presents the Toms River Toy & Train Show. Elks Lodge, 600 Washington St., Toms River, NJ 08753. Sunday, December 21, 2025. 9:00am-2:00pm. Admission: \$7.00; under 12 free with adult. John LaLima 732-845-5966. Go to www.eastcoastrainparts.com and click on Toms River Show.

NJ, WAYNE: ECTP and Collectibles LLC presents The Wayne Special Holiday Train Show. P.A.L. Hall, 1 Pal Drive, Wayne, NJ 07470. Sunday, December 14, 2025, 9:00am-2:00pm. Admission: \$7.00; under 12 free with adult. John LaLima 732-845-5966. Go to www.eastcoastrainparts.com and click on The Wayne Show.

SC, CHARLESTON: Charleston Area Model Railroad Club Show. December 13-14, 2025. Saturday 9am-4pm and Sunday 11am-3pm. Citadel Mall, 2070 Sam Rittenberg Blvd., Charleston, SC 29407. Enter at the Food Court. Three large operating layouts (N, HO, & O). Free parking. Admission: \$10. Kids under 13 get in free. www.camrc.club for more information

WI, LA CROSSE: The 34th Annual Great Tri-State Rail Sale. La Crosse Center, 2nd & Pearl Streets. Saturday, January 24, 2026. 9:00am-3:00pm. Admission: \$8.00; under 12 free. 300 vendor tables. All Scales; Model, Toy & Antique Trains & Memorabilia. Information: 4000 Foundation, PO Box 3411, La Crosse, WI 54602, 608-781-9383. Visit: www.4000foundation.org

WI, NEW BERLIN: Train School will be held Saturday, January 10, 2026, 1-4pm. New Berlin Public Library, Community Room, 15105 Library Lane. Free admission. Come, learn about model trains from experienced model railroaders wanting to share their knowledge of the hobby. Bring your trains to school! Sponsored by the WISE Division of the NMRA. More information, visit: www.wisedivision.org

WI, STEVENS POINT: Central Wisconsin Model Railroaders 28th Annual Model Railroad Show & Sale. Holiday Inn Convention Center Hotel, 1001 Amber Avenue, Stevens Point, WI 54482. January 24-25, 2026. Saturday 9:00am-5:00pm. Sunday 10:00am-3:00pm. Adults \$5.00, kids 12-17 \$2.00. Many layouts, swap/sales tables, vendors. Contact Jim Miller, 715-340-0265; email: jimbrod7@gmail.com or Don Anderson, 715-340-8105; email: cwmr_mnw@yahoo.com

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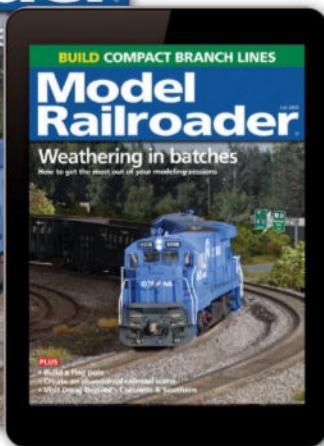
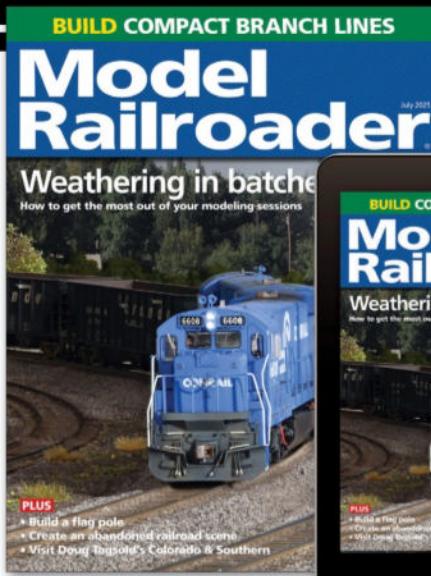
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Nicole McGuire, Chief Operations Officer.		
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The long and short of it



A trio of new 1,600-hp Alco RS3s has MB-98 rolling smartly eastbound across Coal Creek just east of Veedersburg, Ind., on Tony Koester's HO scale Third Subdivision of the NKP's St. Louis Division. The lead unit is running long-hood-forward, just as Alco intended. Craig Wilson photo

During a detailed discussion of a relatively minor accident in Frankfort, Ind., when a pair of Pennsylvania RR EMD E8s banged into a Nickel Plate Road Alco RS3, Larry Ratcliffe and I noticed the Interstate Commerce Commission accident report mistakenly referred to the short-hood end of the RS3 as the front. It was dark, so perhaps the report's author hadn't noticed the "F" painted on either side of the locomotive near the long-hood-end's steps. But in fact, all 23 of the NKP's Alco RS3s, as well as its four Baldwin AS16s, were delivered with the long hood as the front.

What makes this interesting is that the NKP's 48 EMD GP7s, which were delivered earlier than either the RS3s or AS16s in 1951 and 1953, were set up in what came to be regarded as the conventional way: short-hood forward. (We'll ignore holdouts Norfolk & Western and

Southern Ry. for the moment.) So why did the RS3s and AS16s show up "backwards"?

The folks who know for sure are no longer with us, but they left clues. Let's start with the main one, the first "road switcher," hence Alco's term "RS." It was basically an S1 switch engine with a longer frame and a short hood behind the cab and rode on AAR type-B road trucks. And it must have seemed natural leave the F painted on the long-hood end, as on the S1.

But why did the S1 and all Baldwin and EMD switch engines I've ever seen have the long-hood end designated as the front? At least for Alco and Baldwin, as they'd been building steam locomotives forever, it probably seemed normal for the big end to be the front. It also gave the engineer an excellent view of crewmen on the ground when switching in reverse.

I doubt that it even occurred to the designers at Alco and Baldwin to make the short hood the front.

Then along came the kids from Electro-Motive. They grew up with gas-electrics, which segued to Burlington's *Zephyrs* and other less stylish streamliners, which in turn morphed into E and F units. They were certainly accustomed to locating the crew compartment close to the front of the locomotive, first out of necessity with a gas-electric and then perhaps as a simple evolutionary design step for the cab units.

Railroads began to complain about the poor rearward visibility when doing road switching from an F unit. EMD's first answer, the

expensive-to-build, hard-to-service BL2, was a sales dud. Alco was selling RS1s like hotcakes, which segued to the RS2 and then RS3. EMD knew they had to act — quickly. The highly successful GP7 was the result.

Not saddled with decades of steam lore, I doubt that it ever occurred to them to designate the long hood as the front end. In fact, I'll bet the sales team was a bit surprised when a few steam-minded customers ordered Geeps with the long hood out front. Really? Meanwhile, I'd also bet the Alco drummers pointed out that having the big diesel prime mover and generator up front was safer in a grade-crossing accident or "cornfield meet."

Maybe the safety argument held sway at the N&W and SOU. As I've previously written, an oncoming SD45 with the long hood leading the way is impressive to the point of being intimidating. But they, too, eventually joined hands and the fold.

But what about the NKP allowing Alco and Baldwin to deliver their road switchers after EMD had already established a precedent? Maybe no one thought to ask, and they just showed up that way. But it wasn't repeated: Baldwin never got another order, their

four AS16s were reengined by EMD and Alco, and all future Alco road switchers came with the short-hood end marked with an F.



**SO WHY DID
THE RS3S AND
AS16S SHOW UP
"BACKWARDS"?**
—TONY

Maybe the real question is why the first Geeps weren't delivered with low noses for better visibility, like F units? **MR**



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